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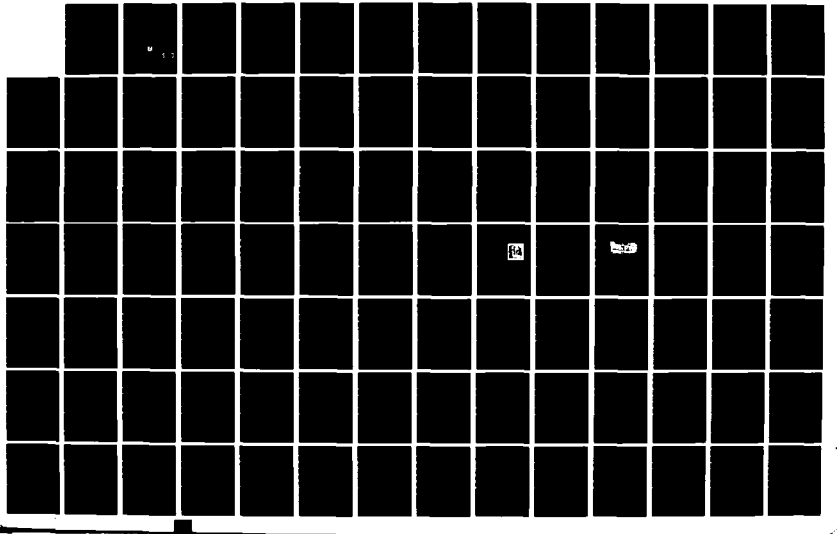

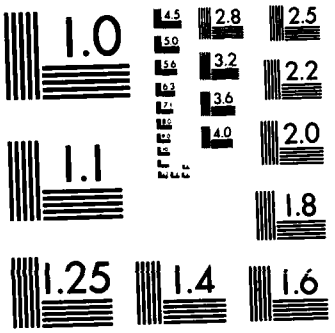

ESD-TR-82-396

MTR-8689

AFSATCOM – COMPATIBLE 75 B/S VOICE SYSTEM HARDWARE AND SOFTWARE

By
J. HANDWERKER

DECEMBER 1982

Prepared for
DEPUTY FOR STRATEGIC SYSTEMS
ELECTRONIC SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
Hanscom Air Force Base, Massachusetts

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REVIEW AND APPROVAL

This technical report has been reviewed and is approved for publication.

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MILSTAR System Program Director

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Synthetic voice response can be added to hard-copy teletype output over a limited-capacity satellite communications channel without modifying exisiting terminal hardware and software. This report describes and documents the hardware and software used to demonstrate such a voice system on an Air Force Satellite Communications (AFSATCOM) terminal, over a 75 b/s channel. Included are detailed flowcharts of the major voice mode sub-programs, and listings of vocabulary source code, assembly code, a cross-reference index for source-to-assembly code, a symbol table, and voice message formats.

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SECTION 1

INTRODUCTION

This report describes and documents the hardware and software for a flexible, cost effective, interactive Voice System utilizing an Intel Single Board Computer SBC 80/20 and a Votrax Versatile Speech Module VSM/1.

When added to an Air Force Satellite Communication (AFSATCOM) system terminal, the Voice System can provide on-line, text-to-speech voice response, in real-time, over a 75 bits-per-second (b/s) teletype (TTY) channel.

This demonstration Voice System can be used to show users of AFSATCOM (and the subsequent MILSTAR system) the feasibility of providing intelligible speech as an adjunct to hard copy TTY output without modifying any existing AFSATCOM hardware or software.

SECTION 2

AFSATCOM SYSTEM

AFSATCOM is a worldwide command, control, and communications system operating in the 225 to 400 MHz ultra high frequency (UHF) spectrum. It provides 75 b/s TTY service with frequency shift keying (FSK) modulation in both clear and encrypted (secure) modes of operation for designated high priority users. The space segment consists of Navy Fleet Satellite Communications (FLTSATCOM) satellites as well as Air Force transponders carried on other vehicles. The terminal segment consists of various ground and airborne equipment configurations designed to meet both force and command operational requirements.

A typical AFSATCOM command post (CP) terminal is represented by the Type 12 Ground Command Post Terminal block diagram of figure 1. This diagram also shows the add-on Voice System. The CP terminal ensures orderly management of daily operation as part of the overall AFSATCOM system control structure. CP terminals can send, receive, and monitor messages; establish synchronization for time division multiplex modes, TDM-1 (normal) and TDM-2 (stressed, antijam); provide satellite UHF commands; and operate in a network control system using random and polled-access techniques in conjunction with an orderwire (OW) channel. Currently, AFSATCOM Type 12 CP terminals use only 75 b/s TTY operation on narrowband (NB) 5 kHz and wideband (WB) 500 kHz channels (ref. 1). In the stressed mode, narrowband channels are pseudorandomly frequency hopped to provide antijam protection.

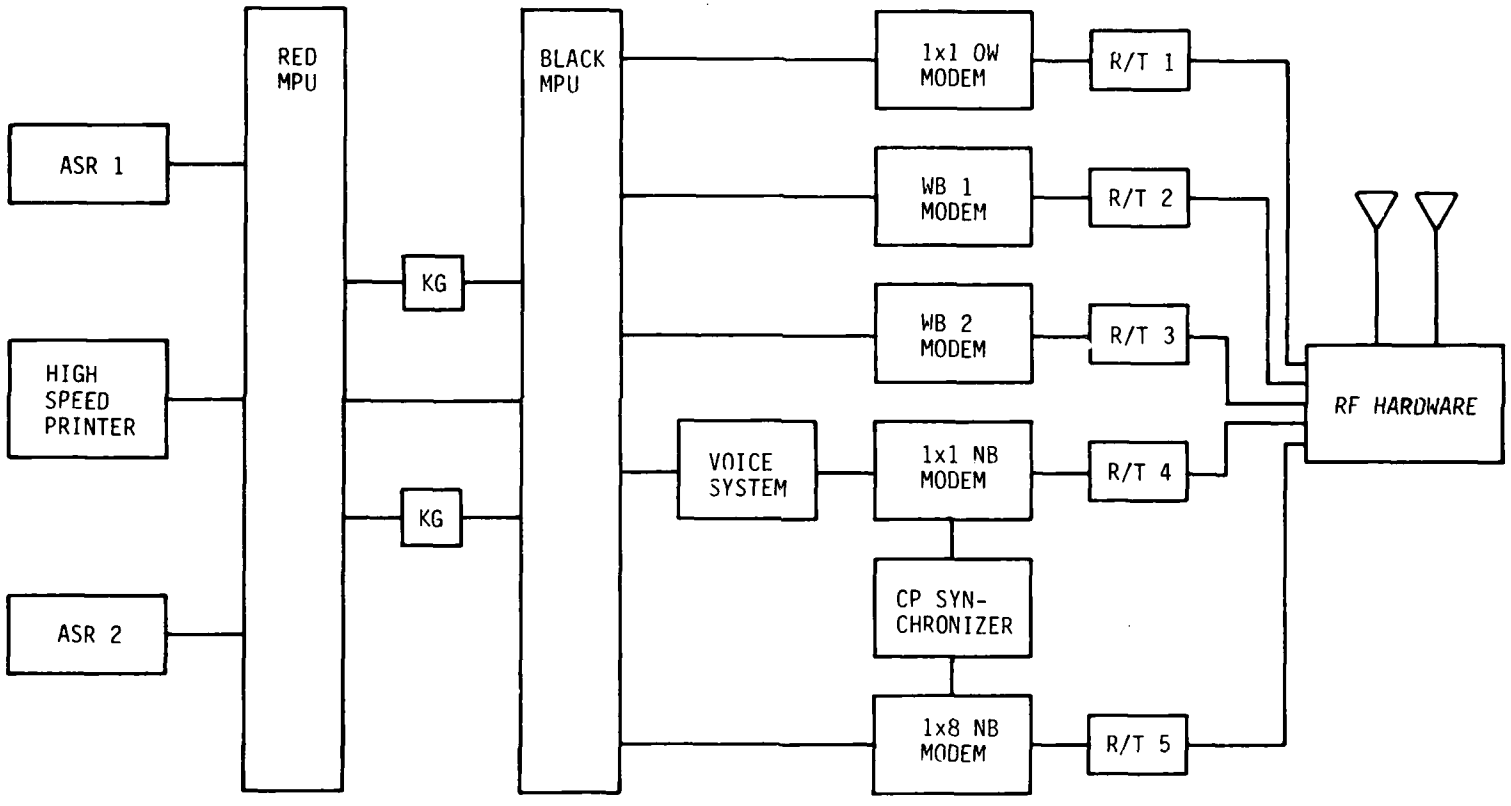


Figure 1. Type 12 Ground CP Terminal Block Diagram With Voice System

SECTION 3

VOICE SYSTEM CONFIGURATION

The Voice System shown in the block diagram of figure 2 can demonstrate flexible synthetic voice techniques over the limited capacity of an AFSATCOM 75 b/s TTY channel. The major elements of the Voice System are: a Host Microcomputer, a phoneme-based Voice Synthesizer, and an optional Digital Message Device. The Host Microcomputer provides all of the interfacing functions to the AFSATCOM terminal hardware, while also providing algorithmic text-to-speech conversion for use with an unmodified, off-the-shelf Voice Synthesizer. The Digital Message Device, using an RS-232 protocol, enables the Host Microcomputer to process both local and remote messages, and emulate functions related to the AFSATCOM system. As shown, the Voice System can interface directly with the AFSATCOM Type 12 terminal so that the terminal architecture will support three new modes related to voice operation: TALK, VERIFY, and WORD STORE.

3.1 TALK MODE

The major mode of operation available in the Voice System is the TALK mode, since it actually produces spoken output from the TTY message text received. Except for formatting details, the TALK and VERIFY modes execute identical algorithms in the Voice System software. The TALK mode can directly output any of the prestored words, prestored spelling words, and prefixes and suffixes of the Host Microcomputer prestored vocabulary shown in appendix A. In addition, the TALK mode can concatenate any of this vocabulary with itself, with prestored user-defined random access memory (RAM) vocabulary in the Host Microcomputer, or with phoneme sequences. Thus, a virtually unlimited vocabulary is supported by a combination of fixed and variable word data-base structures, and direct phonetic sequences.

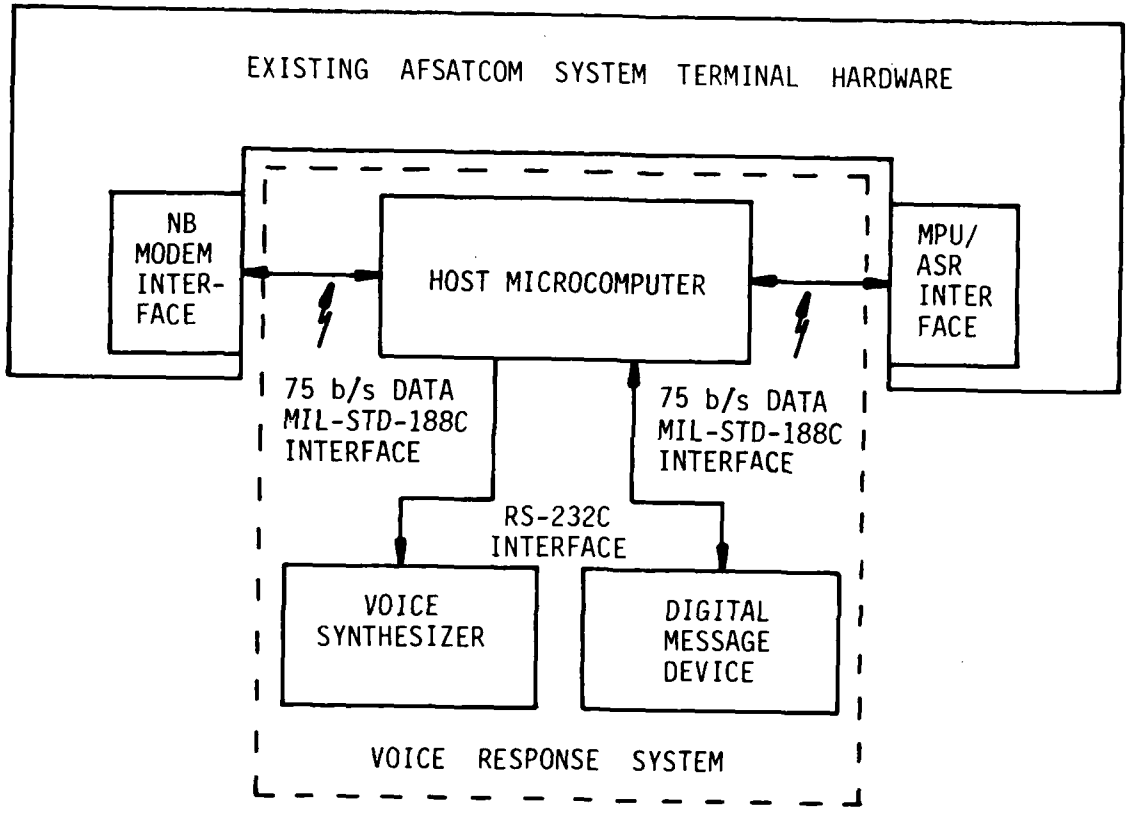


Figure 2. Voice Response System Showing AFSATCOM Interface

3.2 VERIFY MODE

The VERIFY mode is used at the discretion of a sender to verify message content, either locally or over a satellite to a remote Host Microcomputer terminal, before it is voiced at its destination. This permits a user to determine, via feedback from the Host-Microcomputer terminal, the extent to which his message can be voiced directly without having to manually consult a dictionary of currently defined vocabulary. After verifying a message, a user could recompose and reverify his message, or simply send it in the TALK mode where any undefined vocabulary would be voiced in a SPELLING submode. Such distributed processing could assist AFSATCOM terminals not equipped with their own computers in formatting their voice message traffic.

3.3 WORD STORE MODE

The WORD STORE mode can be used to add new user-defined vocabulary to the Voice System's prestored fixed vocabulary in real-time. This enhanced, volatile vocabulary can then be accessed by all users of the Voice System in either the TALK or VERIFY modes.

SECTION 4

HOST MICROCOMPUTER

The Host Microcomputer, originally developed for demonstrating AFSATCOM polling improvements (refs. 2, 3), has been upgraded to accommodate the speech techniques described. It now consists of an Intel 8080A microprocessor-based SBC 80/20 Single Board Computer, two National Semiconductor BLC-416 16K byte electronically programmable read-only memory (EPROM) boards, an Intel Model 450 16K byte RAM board, a power supply subsystem, and interface/display logic circuitry.

A small table-top, 19-inch modular rack, housing an Intel SBC 604 Modular Cardcage/Backplane, provides mounting space for the various boards, power supplies, display circuits, test points, and rear cable terminations that interconnect to the AFSATCOM Type 12 terminal. In addition, two multipole bypass switches, mounted on the front of the microcomputer assembly, can physically disengage the entire Polling/Voice System from the AFSATCOM terminal interfaces without physically removing connectors.

Figure 3 shows the Host Microcomputer EPROM/RAM memory organization for the Polling/Voice System.

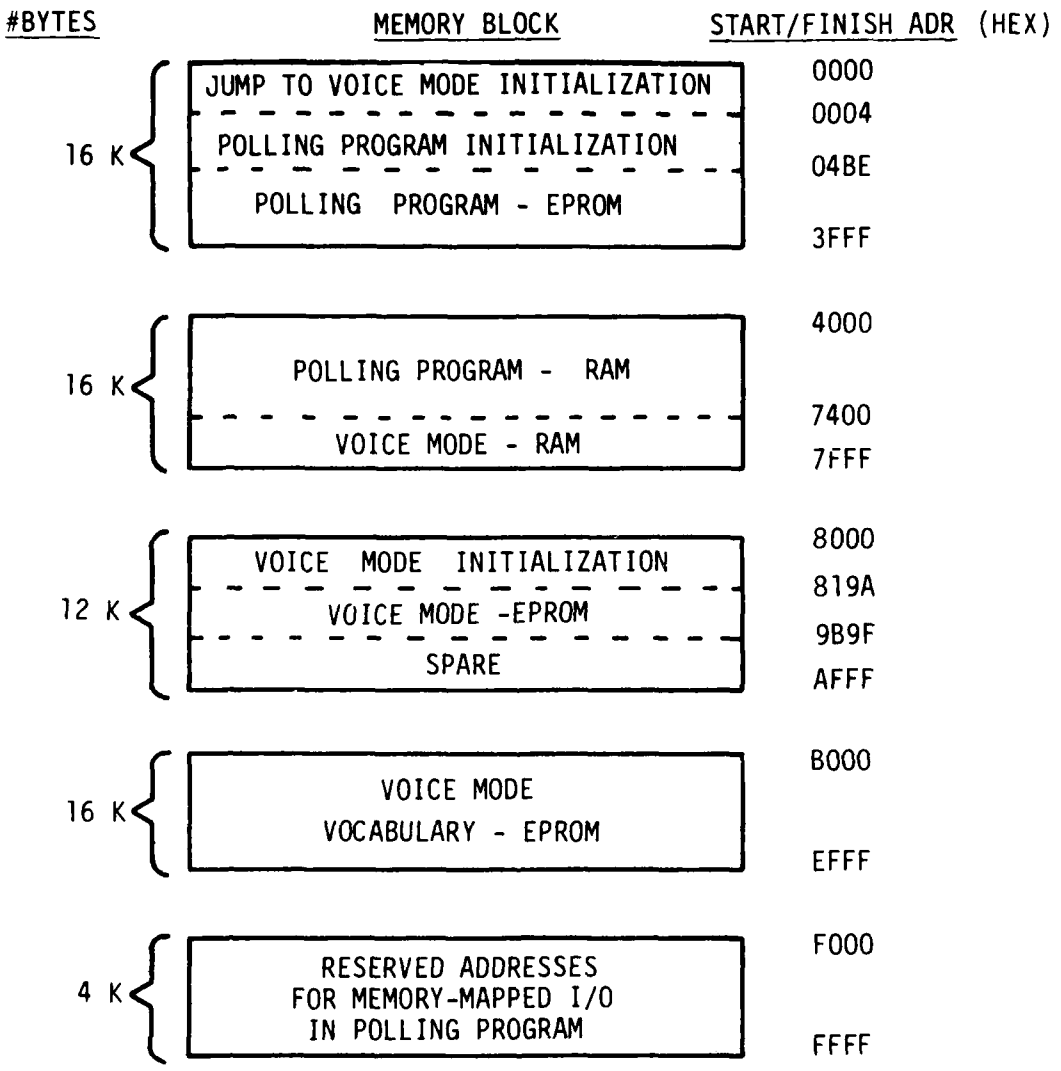


Figure 3. Memory Organization For Polling/Voice Program

SECTION 5

VOICE SYNTHESIZER

The Voice Synthesizer, shown in appendix B, consists of a Votrax Versatile Speech Module VSM/1 single-board computer featuring a Motorola MC6808P microprocessor and a Votrax SC-01 phoneme speech synthesizer integrated circuit. This board accommodates 3K bytes of RAM, a 2K byte operating system with a byte-oriented editor, 8K bytes of prestored vocabulary in read-only memory (ROM) (expandable to 24K bytes), variable clocks for speech rate and pitch control, and an on-board audio amplifier (with volume control) that can deliver 1 W output into an 8 ohm load. Serial (RS-232) and parallel interfaces are also provided with selectable baud rates from 75 to 9600 b/s.

A lexicon of over 1300 industrial/engineering words, prefixes, and suffixes is stored in the vocabulary ROM. The board also supports speech synthesis using either of two phoneme modes (fixed or transitional inflection), thereby providing a virtually unlimited vocabulary from a set of 64 different phoneme code symbols. The SC-01 synthesizer requires a data rate of about 70 b/s for continuous speech production, thus making it suitable for applications such as AFSATCOM or MILSTAR where channel rates may be limited to 75 b/s.

Table 1 summarizes the basic Votrax SC-01 phoneme codes accepted by the VSM/1. Phonemes, prestored speech (stored as phoneme sequences), prestored and user-defined sound effects, inflection levels, pause durations, and instantaneous/transitioned trim controls for continuous dynamic manipulation of audio parameters can all be intermixed in any of the on-board audio-sequence memories. Finally, a half-memory plane expansion connector provides 32K bytes of off-board memory access via the microprocessor data/address/control bus. Reference 4 fully describes the capabilities of the Votrax VSM/1 voice synthesizer.

Table 1

Votrax Phoneme Codes

Phonetic Group	Phoneme Symbol	Code	Example	Duration (ms)
A	A	20	DAY	185
	A1	06	MĀDE	103
	A2	05	MĀDE	71
	AE	2E	DĀD	185
	AE1	2F	AFTER	103
	AH	24	MOP	250
	AH1	15	FATHER	146
	AH2	08	HONEST	71
	AW	3D	CALL	250
	AW1	13	LAWFULL	146
	AW2	30	SALTY	90
	AY	21	DĀY	65
B	B	0E	BAG	71
CH	T-CH	2A-71	CHIP	71
D	D	1E	PAID	55
	DT	04	BUTTER	47
E	E	2C	MEET	185
	E1	3C	BE	121
	EH	3B	GET	185
	EH1	02	HEAVY	121
	EH2	01	ENLIST	71
	EH3	00	JACKET	59
	ER	3A	BIRD	146
F	F	1D	FAST	103
G	G	1C	GET	71
H	H	1B	HELLO	71
I	I	27	PIN	185
	I1	0B	INHIBIT	121
	I2	0A	INHIBIT	80
	I3	09	INHIBIT	55
	IU	36	YOU	59
J	D-J	1E-1A	JUDGE	47
K	K	19	TRICK	80

Phonetic Group	Phoneme Symbol	Code	Example	Duration (ms)
L	L	18	LAND	103
M	M	0C	MAT	103
N	N	0D	SUN	80
	NG	14	THING	121
O	O	26	COLD	185
	O1	35	ABOARD	121
	O2	34	FOR	80
	OO	17	BOOK	185
	OO1	16	LOOKING	103
P	P	25	PAST	103
R	R	2B	RED	90
S	S	1F	PASS	90
	SH	11	SHOP	121
T	T	2A	TAP	71
	THV	38	THE	80
	TH	39	THIN	71
U	U	28	MOVE	185
	U1	37	YOU	90
	UH	33	CUP	185
	UH1	32	UNCLE	103
	UH2	31	ABOUT	71
	UH3	23	MISSION	47
V	V	0F	VAN	71
W	W	2D	WIN	80
Y	Y	29	ANY	103
	Y1	22	YARD	80
Z	Z	12	ZOO	71
	ZH	07	AZURE	90
PAUSES & STOPS	PAØ	03	-PAUSE-	47
	PA1	3E	-PAUSE-	185
	STOP	3F	-STOP-	47

SECTION 6

VOICE SYSTEM SOFTWARE

The Host Microcomputer demonstration software was written in Intel PL/M-80 high-level language on the MITRE Corporation in-house time sharing (TSO) system. The Voice Program PL/M-80 Source Code, shown in appendix C, employs structured programming techniques that are modular, interrupt-free, and self-documenting. Source code was compiled, debugged, and downloaded from TSO to a Tektronix 8002A microprocessor development system. Voice Mode executable code occupying approximately 7K bytes of ROM, along with 16K bytes of ROM vocabulary, was then generated and installed on the Host Microcomputer. Appendix D shows the Voice Program 8080A Assembly Code Instruction Listing; appendix E shows the Voice Program Source-to-Assembly Code Cross-Reference Map; appendix F shows the Voice Program Symbol Table Memory Map; and appendix G shows the Voice Program Vocabulary Table ROM Listing.

Table 2 summarizes the Host Microcomputer memory locations for the major modules of the Polling/Voice program software. The overall Polling/Voice system software is represented functionally by the flow diagram in figure 4. Shown are the significant processing functions of each major module of the Voice Mode along with the logical flow of this imbedded software. The Host Microcomputer operating system provides all of the Improved Polling and input/output (I/O) functions for the AFSATCOM Type 12 terminal. Note that both Voice Mode and Improved Polling are available simultaneously.

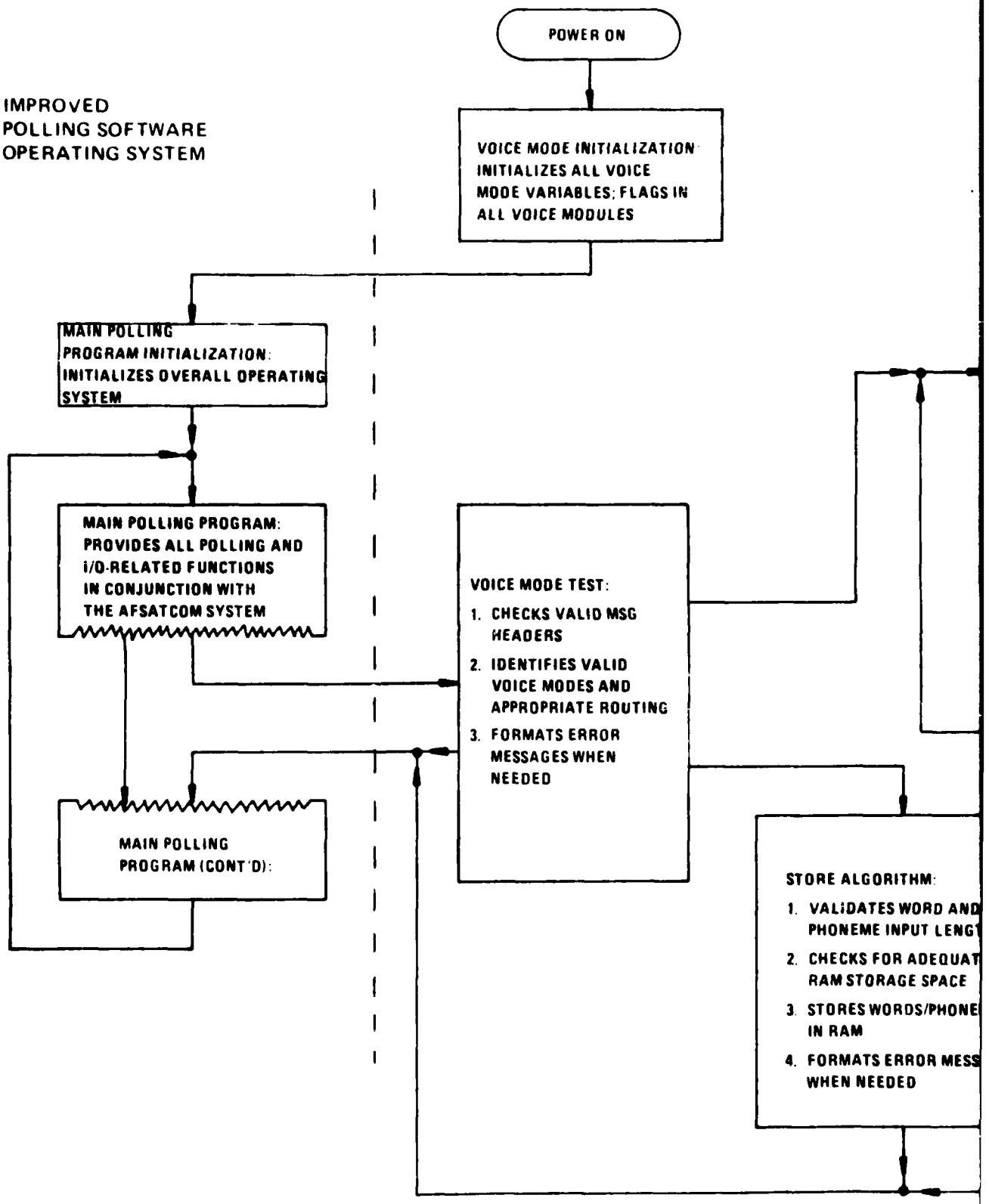
The Voice System derives input from the main polling program major loop on a message-by-message basis only. For each message, however, internal processing functions are broken down on a word-by-word basis for the VERIFY, TALK, and WORD STORE modes in accordance with the individual message formatting requirements summarized in appendix H. When Voice Mode processing is complete, control is returned to the main program.

Table 2

Memory Location Summary For Major
Modules of the Polling/Voice Program

Module Name	Start Address (Hex)	Finish Address (Hex)
Power On	0000	0003
Polling Program Initialization	0004	04BE
Polling Program	04BF	3FFF
Voice Mode Initialization	8000	8190
Voice Mode Test	819A	8374
Store Algorithm	8375	852F
Word Counter	8530	88DA
Table Lookup	88DB	9133
Word Buffer	9134	9B31
Polling Program - RAM	4000	73FF
Voice Mode - RAM	7400	7FFF

IMPROVED
POLLING SOFTWARE
OPERATING SYSTEM



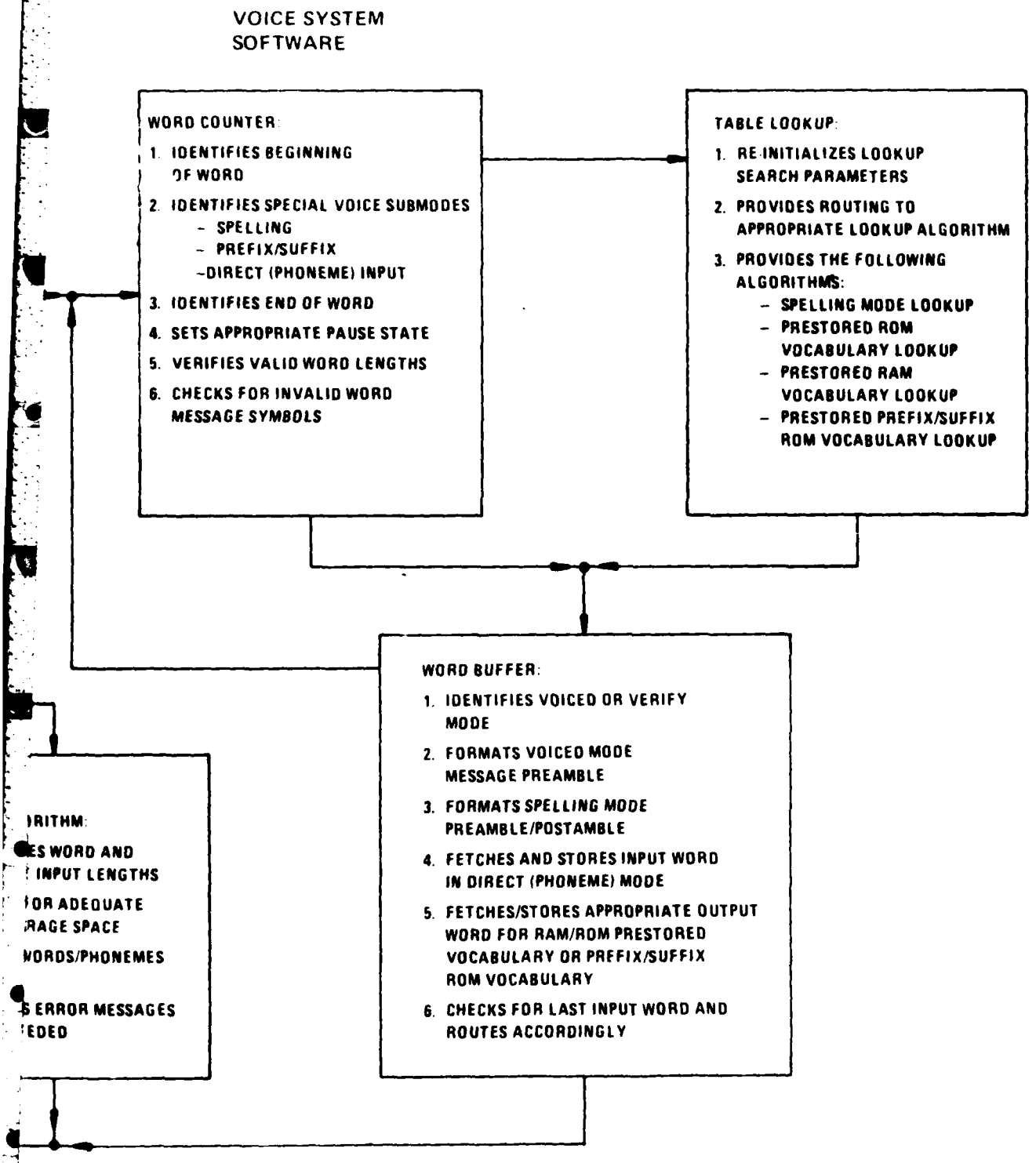


Figure 4. Overall Polling/Voice System Software Functional Flow Diagram

2

6.1 VOICE MODE INITIALIZATION

Figure 5 shows the flowchart of Voice Mode Initialization. This module is accessed from a Power-On reset control on the Host Microcomputer and initializes all variables and flag settings in the subsequent major modules of the Voice Mode. Initialization for the Store Algorithm takes place within the Voice Mode Test module initialization.

6.2 VOICE MODE TEST

Access to the Voice Mode Test module is obtained from the Mode Test and Formatting sub-module within the main polling program Receive Input Algorithm (from Modem). Figure 6 shows the flowchart of the Voice Mode Test module. This module checks for valid message character counts and header formats, and determines appropriate routing to either the Store Algorithm or the Word Counter module. If header checks fail, an error message is formatted and sent to the sender via the appropriate output algorithm of the main polling program.

6.3 STORE ALGORITHM

Figure 7 shows the flowchart of the Store Algorithm. This module checks for valid word and phoneme lengths corresponding to the formatted WORD STORE message. It then checks for adequate WORD STORE RAM space and stores the word (along with its length vector), and the phoneme string (and its length vector), into the next available RAM location. Control is then returned to the main polling program. If any of the checks fail, an error message is formatted and sent to the sender via the appropriate output algorithm of the main polling program.

6.4 WORD COUNTER

Figures 8a, 8b, and 8c show the flowcharts for the Word Counter module. This module is subdivided into Beginning-of-Word Tests, End-of-Word Tests, and Invalid Word Character Tests. Besides identifying the beginning and end of words, it flags the special voice sub-modes (Spelling; Prefix/Suffix; Direct) available with the voice program. Word Counter also sets appropriate pause states based on a word termination character; verifies valid word lengths; and checks for invalid word message symbols within the formatted input message.

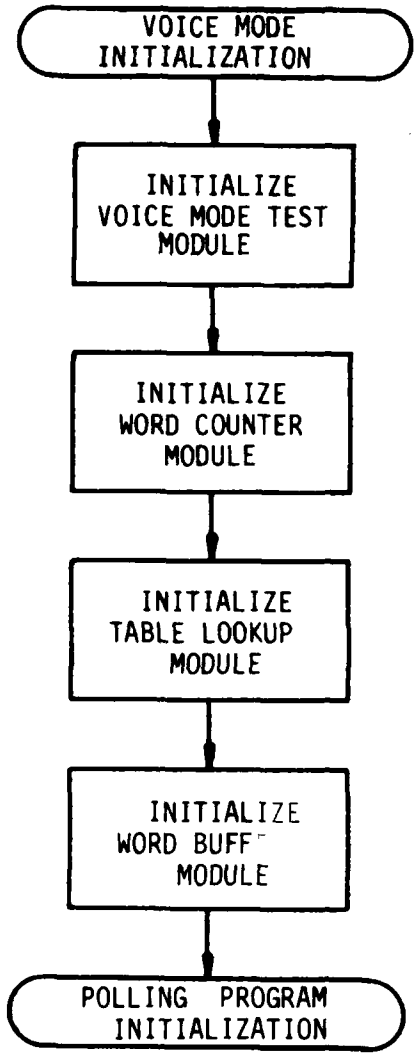


Figure 5. Voice Mode Initialization Flowchart

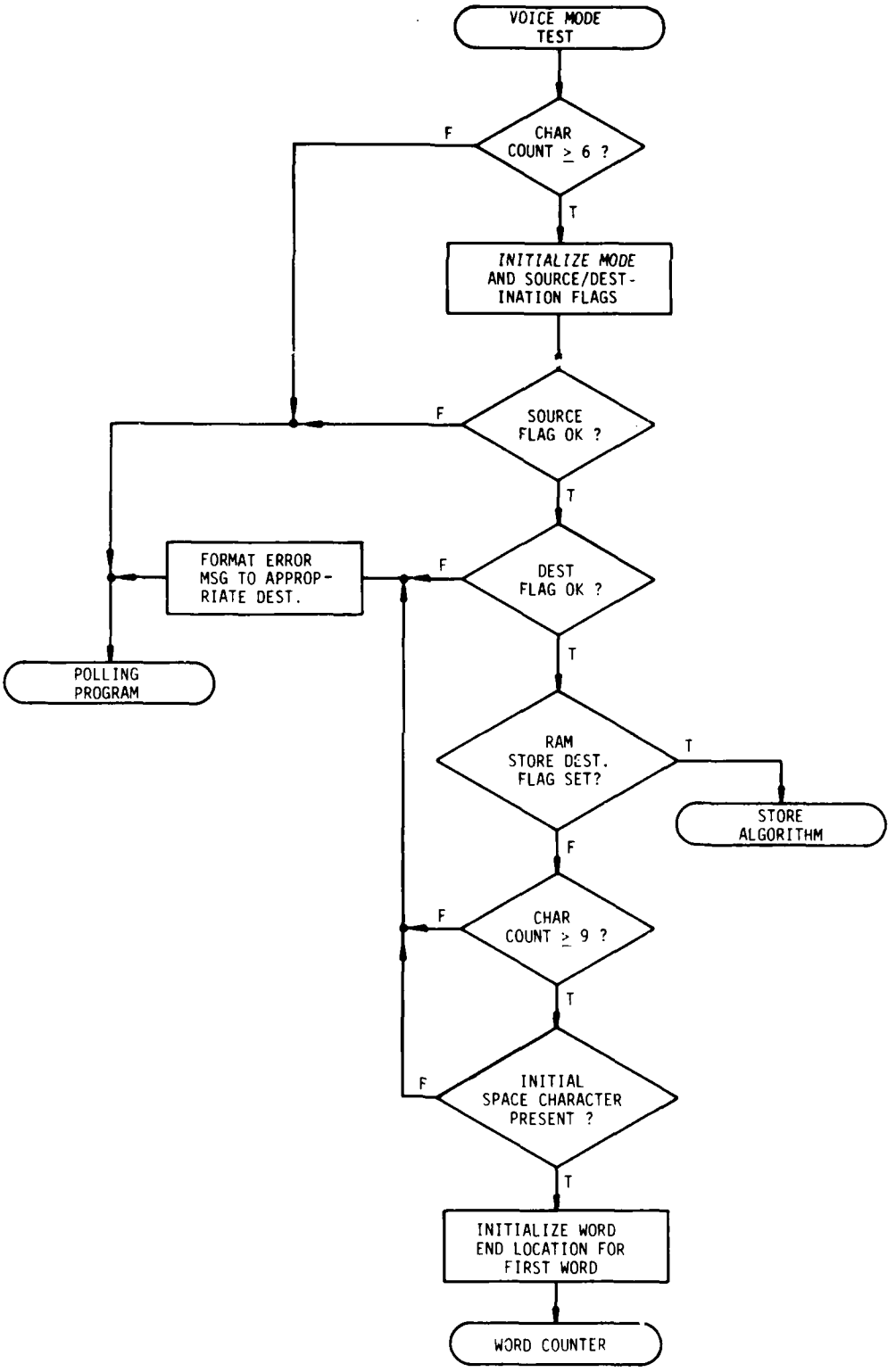


Figure 6. Voice Mode Test Flowchart

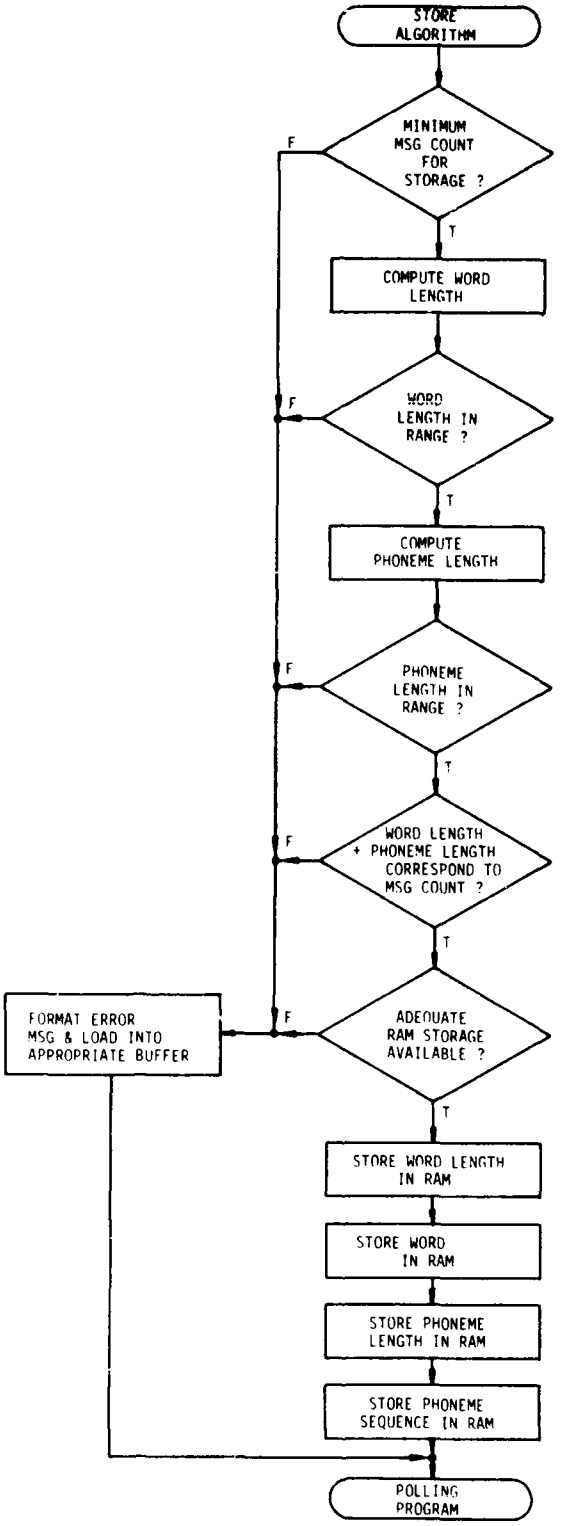


Figure 7. Store Algorithm Flowchart

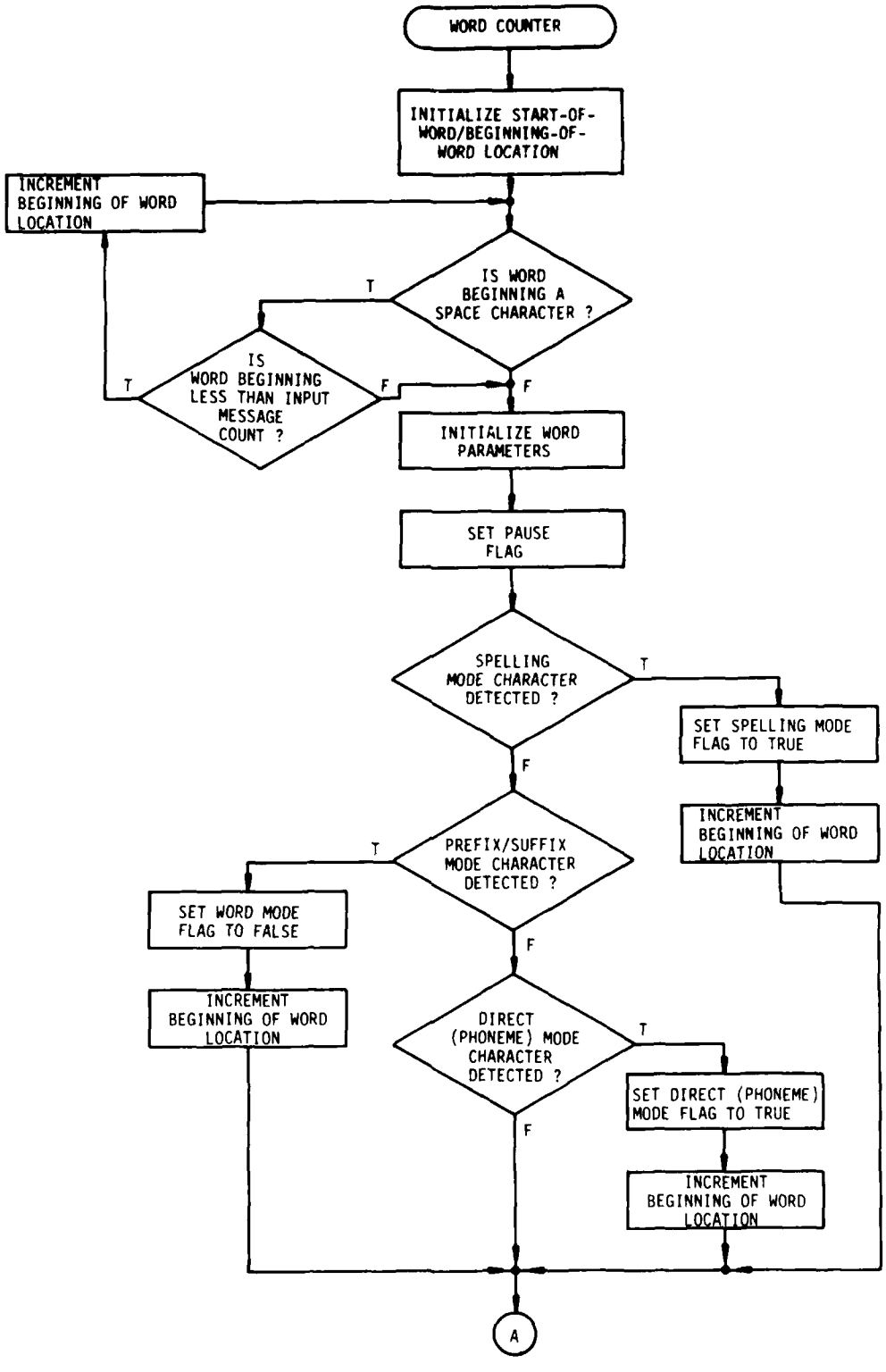


Figure 8(a). Word Counter: Beginning-of-Word Tests

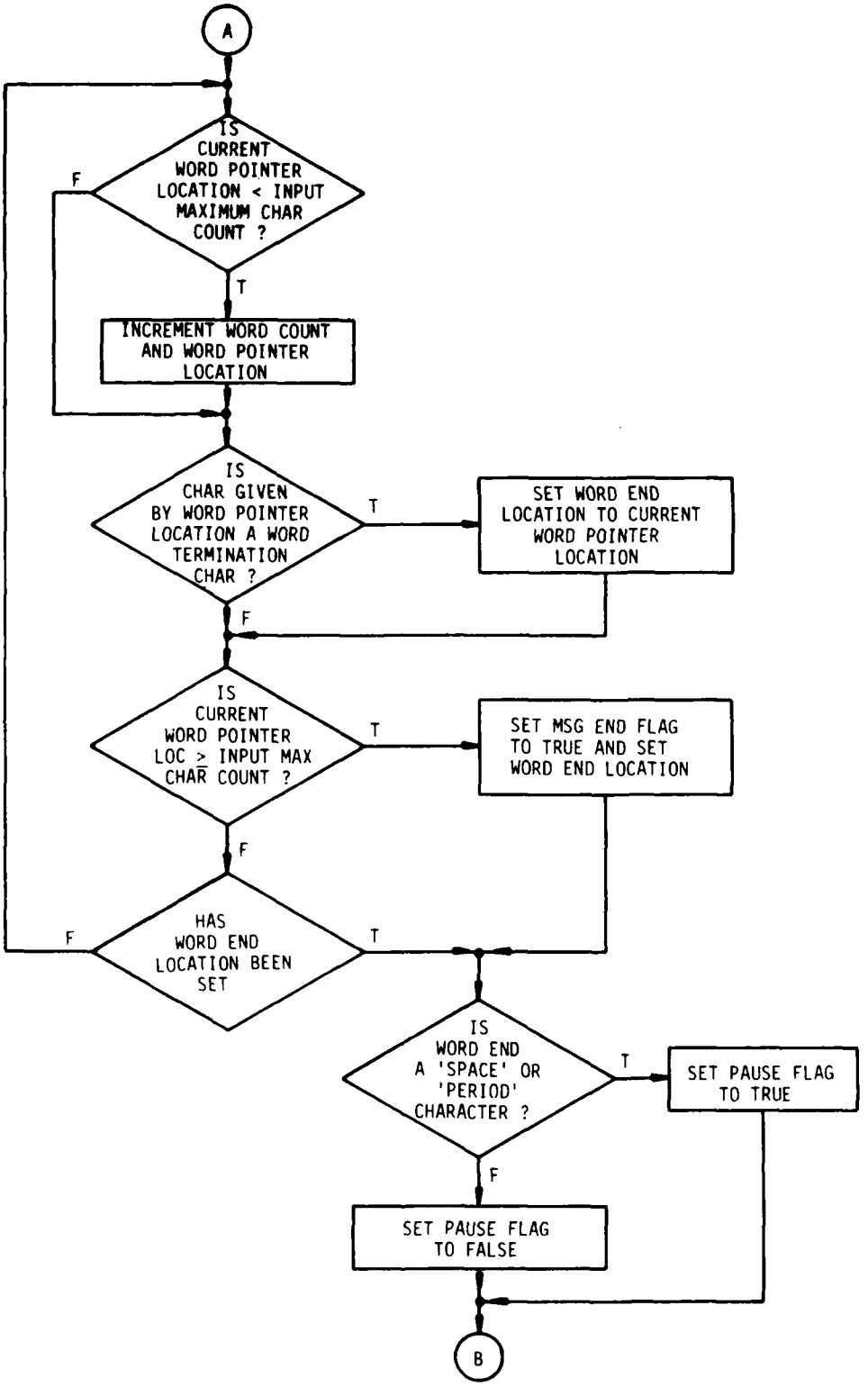


Figure 8(b). Word Counter: End-of-Word Tests

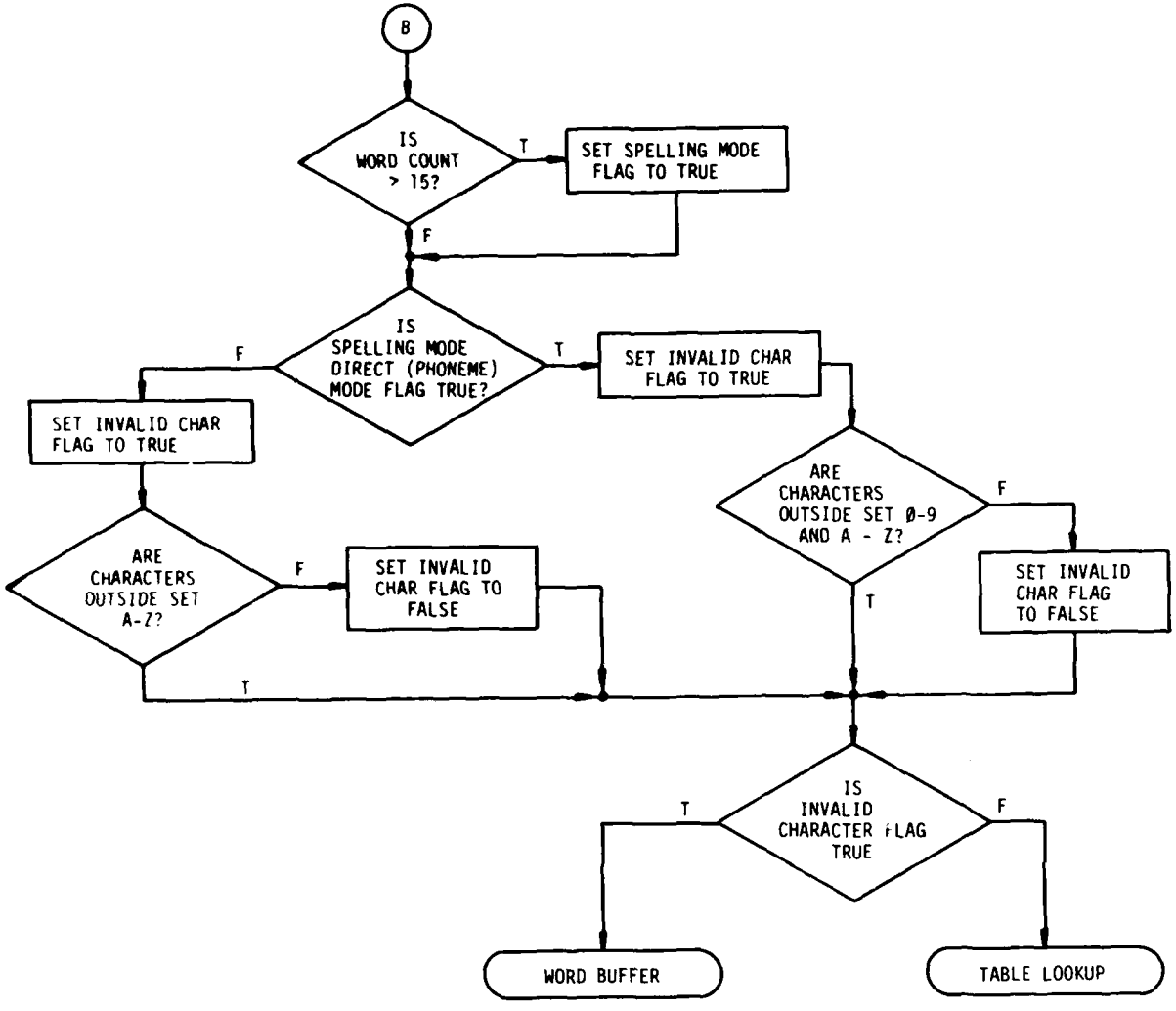


Figure 8(c). Word Counter: Invalid Word Character Tests

6.5 TABLE LOOKUP

Figures 9a, 9b, 9c, 9d, and 9e show flowcharts for the Table Lookup module. This module is subdivided into lookup algorithms for Spelling, ROM, RAM, and Prefix/Suffix. Also shown is an overall flowchart depicting the routing to these various lookup algorithms. After initialization of search parameters and appropriate selection of the algorithm to be executed, a previously identified word is translated into either Votrax prestored speech memory address locations on the VSM/1 voice synthesizer or VSM/1 phoneme-mode sequences for later output message formatting in the Word Buffer module. Phoneme mode output sequences are either derived from a lookup match with prestored RAM vocabulary or from direct (phoneme) sequences input in the TTY message text.

6.6 WORD BUFFER

Figure 10 shows the flowchart for the Word Buffer module. Functionally, this module first identifies the need to output messages in either a TALK mode or a VERIFY mode. TALK mode output message formats include a preamble (an escape sequence) to reset the VSM/1 synthesizer to a known state, followed by the Votrax prestored speech memory address locations or phoneme mode sequences described previously. Word Buffer appends a sound effect preamble and postamble to any words output via the Spelling mode in order to differentiate them from a prestored vocabulary match. Finally, this module determines if the current processed word being formatted into an output message is the last word to be handled in the incoming message. If so, control is returned to the main polling program; otherwise execution returns to the Word Counter module.

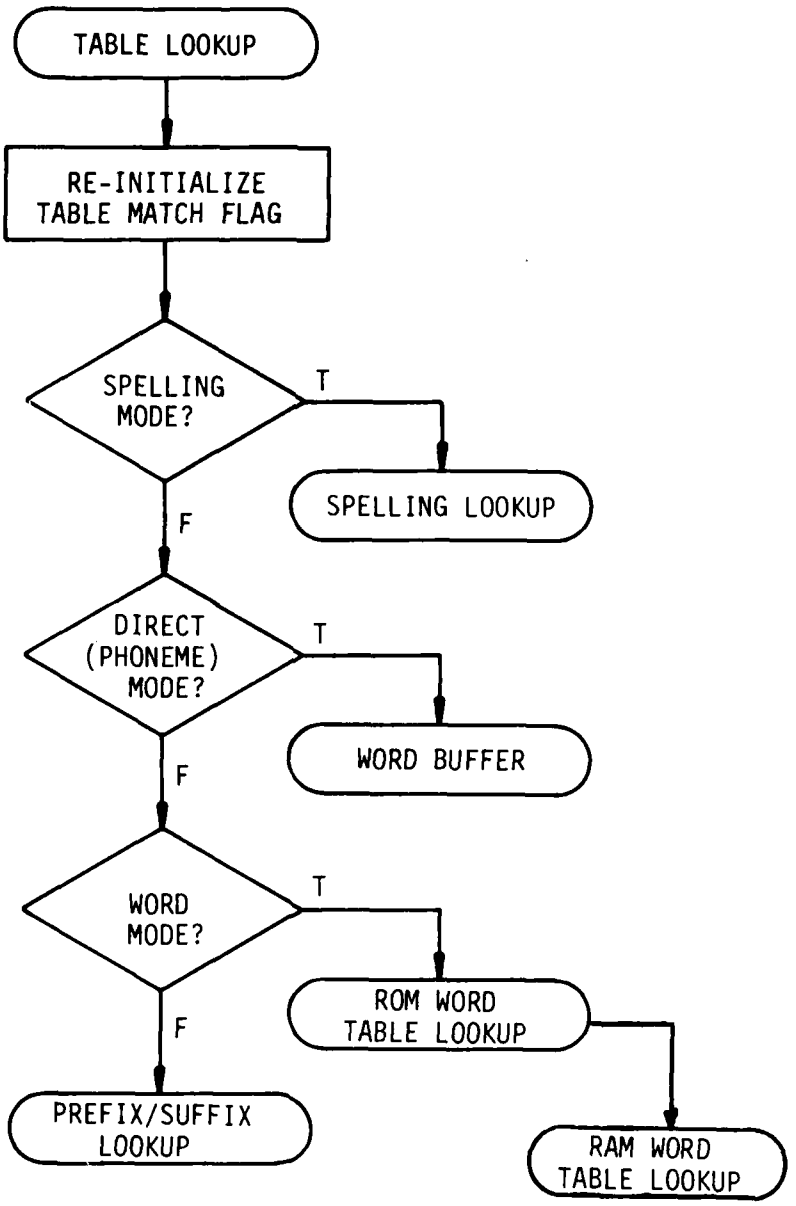


Figure 9(a). Table Lookup: Overall

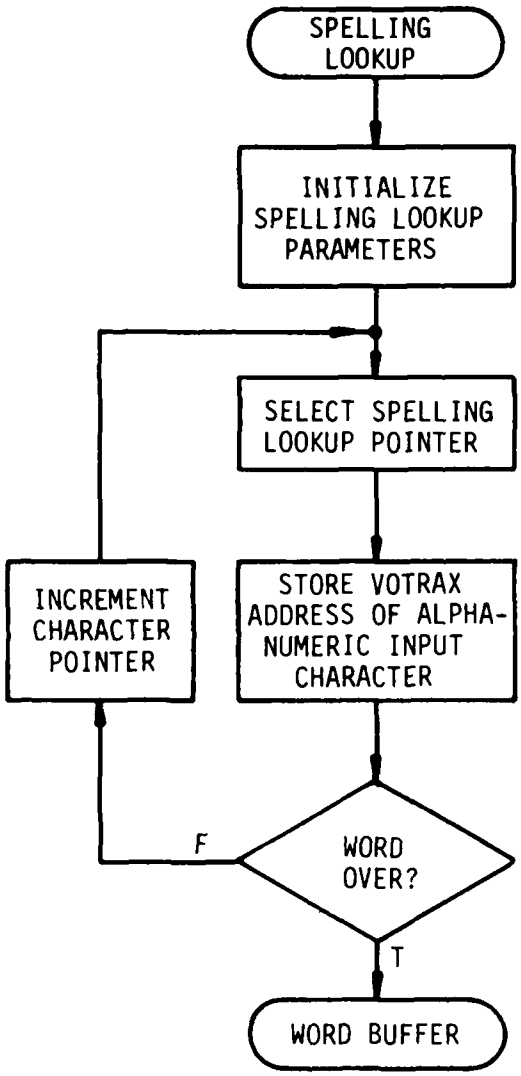


Figure 9(b). Table Lookup: Spelling

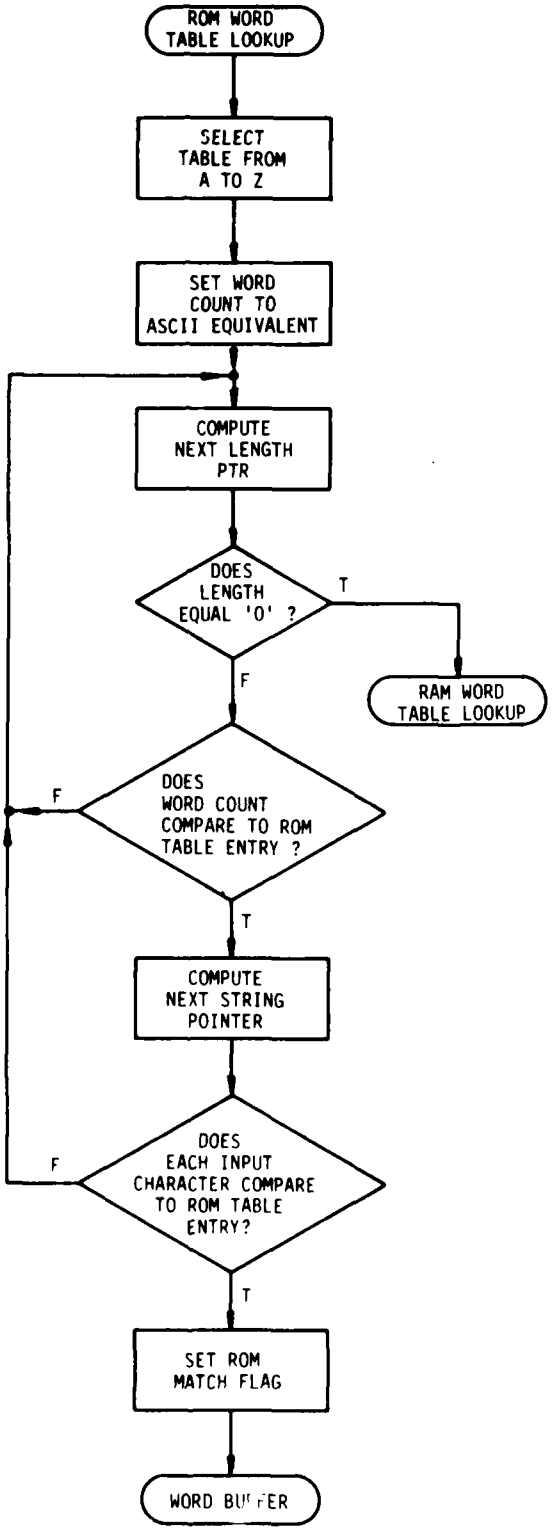


Figure 9(c). Table Lookup: ROM Word

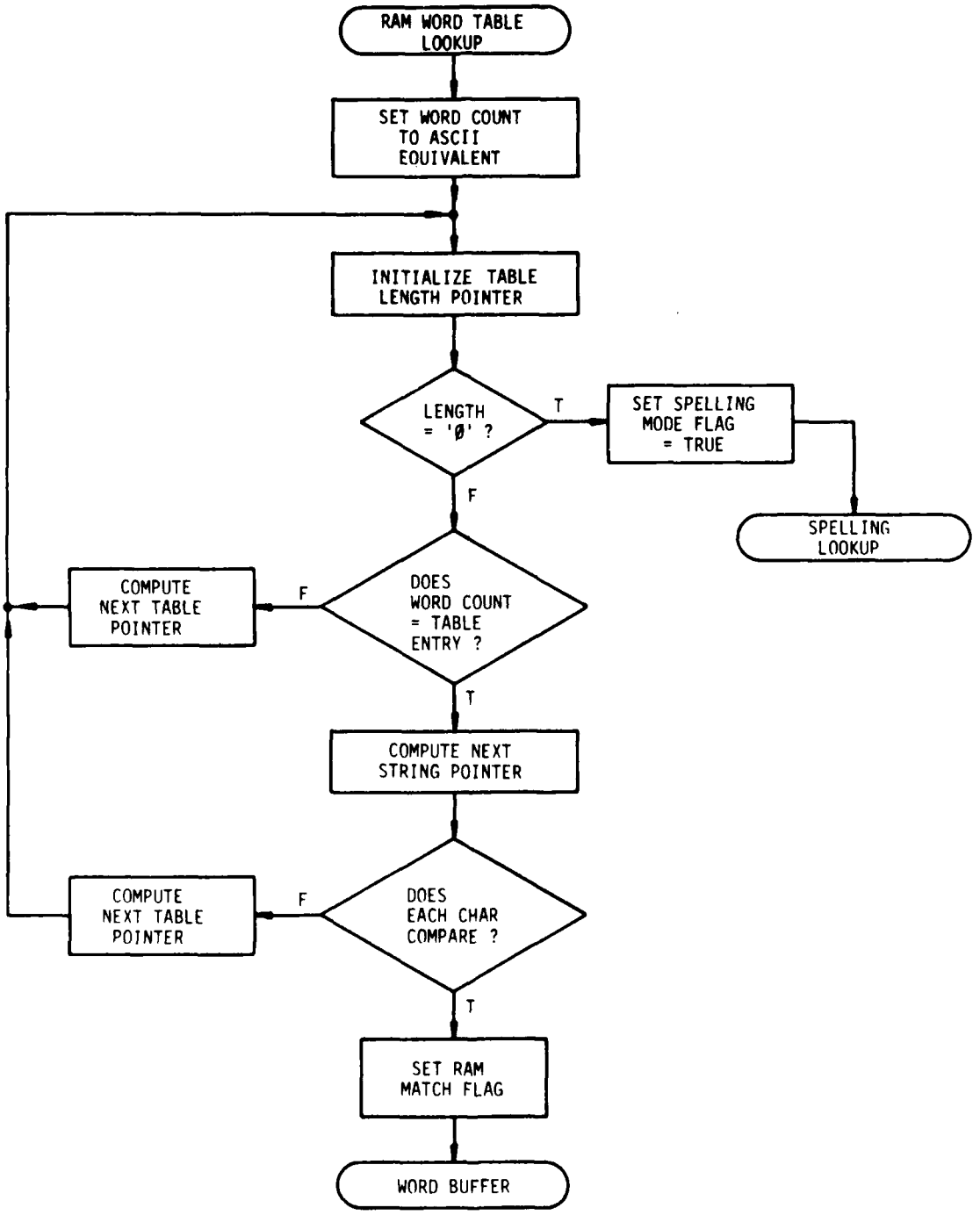


Figure 9(d). Table Lookup: RAM Word

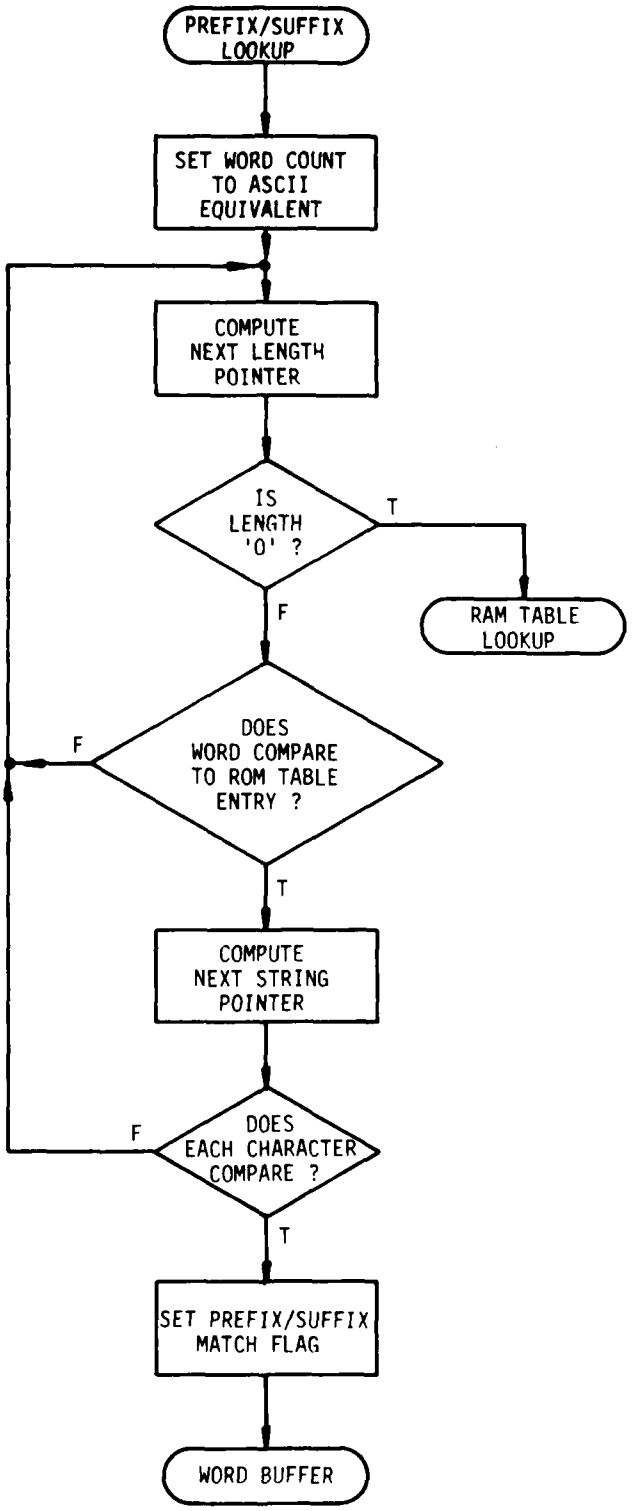


Figure 9(e). Table Lookup: Prefix/Suffix

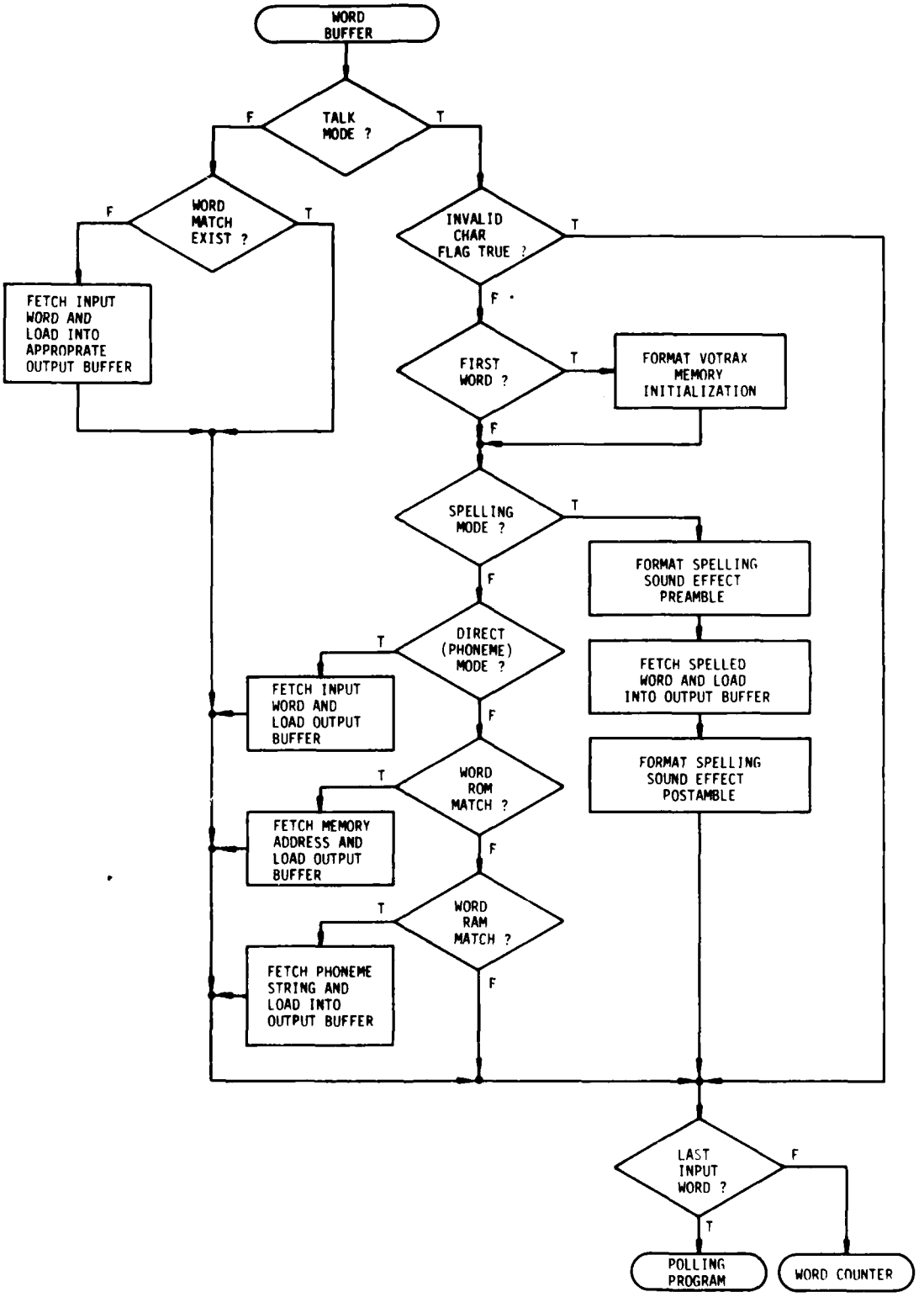


Figure 10. Word Buffer Flowchart

SECTION 7

RESULTS AND CONCLUSIONS

Following the completion of bench testing and terminal integration, the Voice System was successfully demonstrated using an AFSATCOM NB channel. This demonstration included the exercise of the TALK, VERIFY, and WORD STORE modes. No attempt was made to optimize or quantify the voice quality achieved with the VSM/1 standard lexicon. The Voice System was shown to be both intelligible and extremely versatile in accommodating voice traffic normally associated with these TTY channels, while operating within the constraints of the AFSATCOM system.

This initial demonstration test indicates that the addition of Synthetic-voice response capability is feasible for a limited capacity channel as an adjunct to existing hard-copy teletype. Implementation need not involve modifying existing AFSATCOM hardware or software since such real-time voice communications can be supported at 75 b/s using present system interface constraints. This type of voice capability may be attractive for MILSTAR and other applications where channel capacity for certain users limits operation to low data rate teletype communications.

Finally, the Voice System does not preclude use of currently available voice entry devices which can be configured to provide the interface and message formats needed to achieve an end-to-end voice input/voice output capability.

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APPENDIX A

HOST MICROCOMPUTER PRESTORED VOCABULARY

Table A-1

Prestored Word Vocabulary Table

A
ABLE
ABORT
ABOUT
ABOVE
ACCEPT
ACCESS
ACCOUNT
ACID
ACT
ACTIVE
ACTUAL
ADD
ADDRESS
ADJACENT
ADJUST
ADVANCE
ADVISE
AFFECT
AFTER
AGAIN
AGE
AGENT
AHEAD
AID
AIR
ALARM
ALERT
ALL
ALLOCATE
ALLOW
ALPHA
ALREADY
ALSO
ALTITUDE
ALUMINUM
AM
AMERICA
AMOUNT
AMP
AMPLIFY
AN
AND
ANGLE
ANOTHER
ANSWER
ANY
APOSTROPHE
APPROACH
APPROVE
APPROXIMATE
APRIL
ARCHITECT
ARE
AREA
ARRIVE
ARROW
ARTICLE
AS
ASCII
ASK
ASSEMBLE
ASSET
ASSIGN
ASSIST
ASSOCIATE
ASSUME
AT
ATE
ATTACHE
ATTEMPT
ATTEND
AUDIO
AUGUST
AUTHORIZE
AUTOMATIC
AVAILABLE
AVERAGE
AVOID

B
BACK
BAD
BADGE
BAG
BALANCE
BALL
BAND
BANK
BAR
BASE
BASIC
BAT
BATCH
BATH
BATTERY
BE
BED
BEEN
BEEP
BEFORE
BEGIN
BELL
BELOW
BEND
BEST
BETA
BETTER
BETWEEN
BID
BIG
BILL
BILLION
BIN
BINARY
BIRTHDAY
BIT
BITE
BLACK
BLANK
BLEW
BLIND
BLOCK
BLOWN
BLUE
BLUR
BOARD
BOLT
BOND
BOOK
BORED
BOSS
BOTHER
BOTTOM
BOUGHT
BOX
BRACE
BRAIN
BRAKE
BRANCH
BRAVO
BREAK
BRIDGE
BRIEF
BRIGHT
BRING
BROKE
BROUGHT
BROWN
BUBBLE
BUDGET
BUG
BUILD
BUS
BUSINESS
BUSY
BUT
BUTTON
BUY
BY
BYE
BYTE

C
CABLE
CALENDAR
CALIBRATE
CALL

CAME
CANCEL
CAPABLE
CAPACITOR
CAPACITY
CAR
CARD
CARE
CARPENTER
CARRIAGE
CARRY
CARTON
CASE
CASH
CASSETTE
CATALOG
CATEGORY
CAUTION
CENT
CENTER
CENTI
CENTIGRADE
CERTIFY
CHANGE
CHARACTER
CHARGE
CHARLIE
CHART
CHECK
CHEER
CHIP
CHOICE
CIRCLE
CIRCUIT
CITY
CLAIM
CLASS
CLEAN
CLEAR
CLERK
CLIP
CLOCK
CLOSE
CLOUD
COARSE
CODE
COIN
COLLAR
COLLECT
COLON
COLOR
COLUMN
COMBINE
COMMA
COMMAND
COMMERCE
COMMERCIAL
COMMUNICATE
COMPANY
COMPARE
COMPILE
COMPLETE
COMPLY
COMPONENT
COMPUTER
CONCEAL
CONDENSE
CONDITION
CONFIRM
CONFUSE
CONFUSION
CONGRATULATIONS
CONNECT
CONSOLE
CONSULT
CONSUME
CONTAIN
CONTINUE
CONTRACT
CONTRAST
CONTROL
CONVENIENT
COPPER
COPY
CORRECT
CORRESPOND
COSINE
COST
COULD
COUNT
COUNTRY
COUPLE
COURAGE
COURSE
COURT
COVER
CRANE
CRASH
CREASE
CREATE
CREATION
CREDIT
CREW
CRITICAL
CROSS
CROWD
CRY
CUE
CUP
CURIOUS
CURRENCY
CURRENT
CURVE
CUSTOMER
CUT
CYCLE

D
DAILY
DAMAGE
DANGER
DARK
DASH
DATA
DATE
DAY
DEAD
DEAF
DEALER
DEAR
DEBIT
DEBT
DECEMBER
DECIDE
DECIMAL
DECISION
DECLINE
DECREASE
DEDUCT
DEEP
DEER
DEFEAT
DEFEND
DEFENSIVE
DEFER
DEFICIT
DEGREE
DELAY
DELETE
DELIVER
DELTA
DEMAND
DEMONSTRATE
DENY
DESTROY
DETAIL
DETERMINE
DEVICE
DEW
DIAGNOSTIC
DIAL
DICTIONARY
DID
DIE
DIET
DIFFER
DIFFERENCE
DIFFERENT
DIGIT
DIGITAL
DIME
DIODE
DIRECT
DIRECTORY
DIRT
DISAGREE
DISAPPEAR
DISCONNECT
DISCUSS
DISK
DISPLAY
DISTANCE
DIVIDE
DIVIDEND
DIVISION
DO
DOCK
DOCTOR
DOCUMENT
DOES
DOLLAR
DONE

DOOR
DOUBLE
DOUBT
DOWN
DRAFT
DRAW
DRILL
DRINK
DRIVE
DROP
DRUM
DRY
DUE
DUMP
DURATION
DURING
DUTY
DWELL

E
EACH
EAR
EARLY
EARN
EAST
EASY
ECHO
EDGE
EDIT
EDUCATE
EFFECT
EFFICIENT
EFFORT
EIGHT
EIGHTH
EIGHTY
EITHER
ELECTRIC
ELECTRICIAN
ELECTRONIC
ELEVATOR
ELEVEN
ELIGIBLE
ELIMINATE
ELSE
EMIT
EMPLOY
EMPTY
ENABLE
ENCLOSE
END
ENDORSE
ENGINE
ENGINEER
ENGLISH
ENTER
ENTRY
EPSILON
EQUAL
EQUIPMENT
ERASE
ERROR
ESCAPE
ESCROW
ESTABLISH
ESTATE
ESTIMATE
EXACT
EXAMINE
EXCEED
EXCEPT
EXCHANGE
EXECUTE
EXEMPT
EXIT
EXPECT
EXPEDITE
EXPEND
EXPERIMENT
EXPONENT
EXPRESS
EXTENSION

F
FACE
FACILITY
FACT
FAHRENHEIT
FAIL
FALL
FALSE
FAMILIAR
FAR
FARAD
FAST
FAULT
FEAT
FEATURE
FEBRUARY
FEDERAL
FEE
FEED
FEET
FEMALE
FIELD
FIFTEEN
FIFTH
FIFTY
FILE
FILL
FINAL
FINANCE
FIND
FINGER
FINISH
FIRE
FIRST
FIT
FIVE
FIX
FIXTURE
FLASH
FLAT
FLIGHT
FLIP
FLOOR
FLOP
FLOW
FLY
FOLD
FOLLOW
FOOD
FOOT
FOR
FORCE
FORE
FOREMAN
FORGET
FORGIVE
FORM
FORMAT
FORTY
FORWARD
FOUND
FOUR
FOURTH
FOXTROT
FRAME
FRAUD
FREE
FRENCH
FREQUENCY
FREQUENT
FRIDAY
FRIGHT
FROM
FRONT
FRUIT
FUEL
FULL
FUNCTION
FUND
FURNACE
FURTHER
FUTURE

G
GAGE
GAIN
GAIT
GALLON
GAME
GAMMA
GAP
GARAGE
GAS
GATE
GAUGE
GENERAL
GENERATE
GENTLEMEN
GERMAN
GET
GIRL
GIVE
GLASS
GLITCH
GLOBE
GO
GOLF
GOOD
GOVERN

GRADE
GRAM
GRAND
GRAPH
GRATE
GRAY
GREAT
GREEN
GREET
GREY
GRIND
GROCERY
GROUND
GROUP
GROW
GUARANTEE
GUARD
GUESS

H
HAD
HALF
HALT
HAMMER
HAND
HANDLE
HANG
HAPPY
HARD
HAS
HAVE
HE
HEAD
HEAR
HEART
HEAT
HEAVY
HEIGHT
HELD
HELLO
HELP
HENRY
HER
HERE
HERTZ
HEX
HIGH
HIS

HOLD
HOLE
HOME
HOOK
HOST
HOT
HOTEL
HOUR
HOUSE
HOW
HUMAN
HUNDRED
HUNGRY

I
IDLE
IDOL
IF
IMMEDIATE
IMPORTANT
IMPROPER
IMPROVE
IN
INCH
INCLUDE
INCOME
INDEPENDENT
INDEX
INDIA
INDICATE
INDUSTRIAL
INFORM
INITIAL
INN
INPUT
INQUIRE
INSERT
INSPECT
INSTALL
INSTEAD
INSTRUCT
INSTRUMENT
INSUFFICIENT
INSURANCE
INTEREST
INTERFACE
INTERPRET
INTERRUPT

INTRUDE
INVALID
INVENT
INVENTORY
INVEST
INVOICE
IRREGULAR
IS
IT
ITEM

J
JACK
JANUARY
JOB
JOIN
JOLT
JOY
JUDGE
JULIET
JULY
JUMP
JUNE

K
KEEP
KEY
KEYBOARD
KILL
KILO
KNEW
KNOT
KNOW
KNOWLEDGE

L
LAB
LABOR
LANGUAGE
LAPSE
LARGE
LAST
LATE
LAW
LEAD
LED
LEFT
LEG

LEGAL
LEND
LENGTH
LESS
LET
LETTER
LEVEL
LIFE
LIGHT
LIKE
LIMA
LIMIT
LINE
LINEAR
LINK
LIP
LIQUID
LIST
LISTEN
LITTLE
LOAD
LOAN
LOCAL
LOCK
LOG
LONG
LOOK
LOSS
LOST
LOT
LOW

M
MACHINE
MAIL
MAINTENANCE
MAKE
MALE
MAN
MANAGE
MANUAL
MANUFACTURE
MANY
MAP
MARCH
MARGIN
MARK
MARKET

MATCH
MATURE
MAXIMUM
MAY
ME
MEASURE
MEAT
MECHANICAL
MEDIA
MEDICINE
MEDIUM
MEET
MEGA
MEMBER
MEMORY
MEN
MERCHANDISE
MERGE
MESSAGE
METAL
METER
MICRO
MIDDLE
MIKE
MILE
MILL
MILLI
MILLION
MINI
MINUS
MINUTE
MISCELLANEOUS
MISS
MISTAKE
MODE
MODEL
MODULE
MONDAY
MONEY
MONTH
MORE
MORNING
MOST
MOTOR
MOUNT
MOVE
MR
MRS
MS
MUCH
MULTI
MULTIPLE
MULTIPLY

N
NAME
NANO
NATIONAL
NATIVE
NEAR
NEAT
NECK
NEED
NEGATIVE
NET
NEUTRAL
NEW
NEXT
NICE
NICKEL
NIGHT
NINE
NINETY
NINTH
NO
NOISE
NONE
NOON
NORMAL
NORTH
NOT
NOTE
NOTHING
NOTICE
NOTIFY
NOVEMBER
NOW
NUMBER
NURSE
NUT

O
OAR
OBJECT
OBLIGATION
OBSOLETE
OCTOBER
ODD
OF
OFF
OFFICE
OFFICIAL
OFTEN
OHM
OIL
OLD
OMEGA
OMIT
ON
ONCE
ONE
ONLY
OPEN
OPERABLE
OPERATE
OPERATOR
OPTION
OR
ORANGE
ORDER
ORE
ORIGINAL
OSCAR
OTHER
OUNCE
OUT
OVEN
OVER
OWN
OXYGEN

P
PACK
PACKAGE
PAGE
PAID
PAIN
PANE
PANEL
PAPA
PAPER
PARCEL
PAREN
PART
PARTIAL
PASS
PASSED
PAST
PAT
PATTERN
PAUSE
PAY
PEA
PEACE
PEAK
PEEK
PERCENT
PERIOD
PERMANENT
PERSON
PERSONAL
PERSONALITY
PHASE
PHONE
PICK
PICO
PIECE
PINT
PIPE
PLACE
PLAIN
PLAN
PLANE
PLANT
PLAY
PLEASE
PLOT
PLUS
POCKET
POINT
POKE
POLICE
POLICY
POOR
POP
PORT
POSITION
POSITIVE
POSSIBLE
POST
POTENTIAL
POUND

POUR
POWER
PRACTICE
PREMIUM
PREPARE
PRESS
PRESSURE
PREVENT
PREVIOUS
PRICE
PRINCIPAL
PRINCIPLE
PRINT
PRIOR
PRIORITY
PRIVATE
PROBE
PROBLEM
PROCEDURE
PROCEED
PROCESS
PRODUCE
PRODUCT
PROFESSION
PROFIT
PROGRAM
PROGRESS
PROJECT
PROM
PROMOTE
PROPOSE
PROTECT
PUBLIC
PULL
PULSE
PURCHASE
PURE
PURPOSE
PUSH
PUT

Q
QUALIFY
QUANTITY
QUART
QUARTER
QUEBEC
QUESTION
QUICK
QUIET
QUIT
QUIZ
QUOTA
QUOTE

R
RADIO
RAIL
RAIN
RAISE
RANGE
RATE
RATIO
REACH
READ
READY
REAL
REASON
REBATE
RECALL
RECEIPT
RECEIVE
RECORD
RED
REEL
REFER
REFUND
REFUSE
REGISTER
REGULAR
REIN
REJECT
RELAY
RELEASE
REMAIN
REMOVE
REPAIR
REPEAT
REPLACE
REPORT
REPRESENT
REQUEST
REQUIRE
REQUISITION
RESCUE
RESEMBLE
RESET
RESISTOR
RESPECT
RESPOND
RESPONSIBLE
REST
RESTRICT
RESULT
RESUME
RETAIL
RETAIN
RETURN
REVISION
REVOLVE
RIBBON
RIGHT
ROMEO
ROOM
ROOT
ROUND
ROUTE
ROW
RUN
RUSH

S
SAFE
SAIL
SALARY
SALE
SAME
SATURDAY
SAVE
SAY
SCAN
SCENT
SCHEDULE
SCHOOL
SCIENCE
SCORE
SCRAP
SCREW
SEA
SEARCH
SEAT
SECOND
SECRET
SECTION
SECURITY
SEE
SEIZE
SELECT
SELL
SEMI
SEND
SENT
SENTENCE
SEPARATE
SEPTEMBER
SEQUENCE
SERIAL
SERIES
SERVICE
SET
SEVEN
SEVENTH
SEVENTY
SEVERAL
SEW
SHARE
SHARP
SHIFT
SHIP
SHOP
SHORT
SHOULD
SHUNT
SHUT
SIDE
SIERRA
SIGNAL
SILVER
SINGLE
SIX
SIXTH
SIXTY
SIZE
SKIN
SKY
SLANG
SLASH
SLAVE
SLIP
SLOW
SMALL
SMELL

SMILE
SMOKE
SNOW
SO
SOFT
SOLD
SOLID
SOME
SON
SORRY
SORT
SOUND
SOURCE
SOUTH
SPACE
SPARK
SPEAK
SPECIAL
SPEECH
SPEED
SPELL
SPEND
SPLIT
SPOON
SPRING
SQUARE
STACK
STAIR
STAND
STANDARD
STAR
STARE
START
STATE
STATION
STATUS
STEAL
STEEL
STEP
STICK
STOCK
STOP
STORE
STRAIGHT
STRAIT
STREET
STRESS
STRING
STRUCTURE
STYLE
SUBJECT
SUBSTITUTE
SUBTRACT
SUFFICIENT
SUGGEST
SUIT
SUITE
SUM
SUMMARY
SUMMER
SUN
SUNDAY
SUPER
SUPPLY
SURFACE
SURGE
SURGERY
SURGICAL
SURPLUS
SUSPEND
SWEEP
SWEET
SWITCH
SYNTAX
SYSTEM

T
TABLE
TAIL
TALE
TALK
TANGENT
TANGO
TARGET
TEA
TEAM
TECHNICAL
TEE
TEMPERATURE
TEN
TERMINAL
TEST
THAN
THE
THEN
THEORY
THIN
THING
THINK
THIRD
THIRTEEN
THIRTY
THOUSAND
THREE
THREW
THROUGH
THURSDAY
TICKET
TILL
TIME
TIRE
TITLE
TO
TODAY
TOILET
TOLL
TOMORROW
TON
TONE
TOO
TOOL
TOTAL
TOUCH
TOWEL
TRACE
TRADE
TRAIN
TRANSACT
TRANSFER
TRANSISTOR
TRANSMIT
TRANSPORT
TRANSPORTATION
TRAVEL
TRIANGLE
TROUBLE
TRUCK
TRUE
TRUST
TRY
TUESDAY
TUNE
TURN
TWELVE
TWENTY
TWO
TYPE

U
ULTRA
UNDER
UNIFORM
UNTIL
UP
URGENT
US
USE

V
VACANT
VALID
VALUE
VARY
VENDOR
VENT
VERIFY
VERY
VIA
VICTOR
VOICE
VOID
VOLT
VOLUME

W
WAGE
WAIT
WANT
WAS
WASH
WATER
WATT
WAVE
WAY
WE
WEAK
WEAPON
WEAR
WEDNESDAY
WEEK
WEIGH
WEIGHT
WENT
WEST
WET
WHAT
WHEEL
WHEN
WHERE
WHICH
WHILE
WHISKEY
WHITE
WHO
WHOLE
WHY
WILL
WINDOW
WINTER
WIRE
WITH
WITHDRAW
WITHOUT
WON
WORD
WORK
WRITE
WRONG

X
X-RAY

Y
YANKEE
YARD
YEAR
YELLOW
YES
YESTERDAY
YET
YOU
YOUR

Z
ZAP
ZERO
ZONE
ZULU

Table A-2

Prestored Prefix/Suffix Vocabulary

CON	ING
CIS	LESS
EN	LY
IN	MENT
NON	NESS
PRE	S
RE	T
UN	TION
ED	SION
ER	TEEN
ES	WARD
FUL	Y
	Z

Table A-3

Prestored Spelling Word Vocabulary

A = ALPHA	N = NOVEMBER	0 = ZERO
B = BRAVO	O = OSCAR	1 = ONE
C = CHARLIE	P = PAPA	2 = TWO
D = DELTA	Q = QUEBEC	3 = THREE
E = ECHO	R = ROMEO	4 = FOUR
F = FOXTROT	S = SIERRA	5 = FIVE
G = GOLF	T = TANGO	6 = SIX
H = HOTEL	U = UNIFORM	7 = SEVEN
I = INDIA	V = VICTOR	8 = EIGHT
J = JULIET	W = WHISKEY	9 = NINE
K = KILO	X = X-RAY	
L = LIMA	Y = YANKEE	
M = MIKE	Z = ZULU	

APPENDIX B

VOTRAX VERSATILE SPEECH MODULE (VSM/1) PRODUCT DATA

VERSATILE SPEECH MODULE T.M.
(VSM/1)

Votrax®
PRODUCT DATA

FEATURES

- **True synthetic speech technology** and a built in microcomputer eliminate the constraints of a small fixed vocabulary speech module
- **Ultra low bit rate** of the SC-01 maximizes ROM word storage capabilities
- **Large lexicon** of commonly used words with industrial engineering base stored in EPROM
- **Built in prefix/suffix table** for prestored words
- **Additional vocabulary** can be created and permanently stored
- **Phoneme accessing capability** for unlimited vocabulary
- ***Speech rate and pitch*** *dynamic* programming for stress patterns and simulation of multi-voice environments
- **Sound effects**, from gunfire to musical sequences can be easily created from prestored sound macros. Additional sound macros can be user defined and EPROM stored for even greater flexibility.
- **Expandable** via interface ports
- **Parallel and RS232 compatible serial interfacing** with selectable baud rates and terminal modes
- **Foreground and background** simultaneous operation for speech and voxOS (voice operating system)
- **Built in microcomputer** can also simultaneously perform monitoring activities and execute speech commands

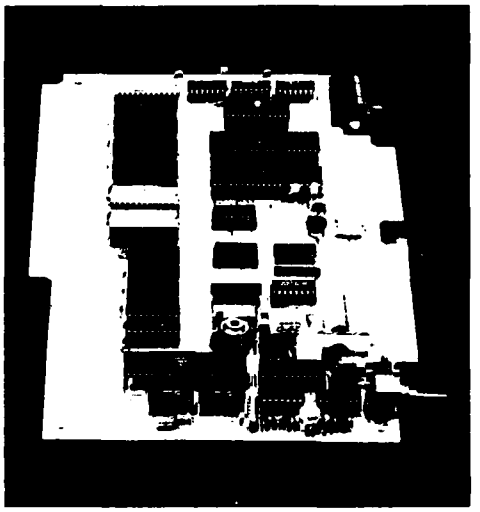

Figure 1. Votrax **VSM/1™**
(Versatile Speech Module)

APPLICATIONS

- The **VSM/1™** can be used as a **microcomputer** to simulate or develop talking products, such as a talking calculator or talking games. It can also be used for unlimited real time speech synthesis while simultaneously executing commands and performing monitoring activities.
- The **VSM/1™** can plug directly into the card cage of an industrial control computer to provide **prompting for operating personnel** (instructions for a real time situation). Typical applications are chemical processing plants, nuclear power stations, aircraft systems, seismic monitoring stations and automated warehousing.

Votrax®
Division of Federal Screw Works
500 Stephenson Highway, Troy, Michigan 48084
Phone (313)588-2050

APPLICATIONS (continued)

- The **VSM/1'™** can operate in a computer-to-computer mode for **task downloading** in addition to voice synthesis. It is a smart peripheral which can be used in a distributed processing mode. Instructions and activities can be dynamically supplied from another computer or from a user ROM.

DESCRIPTION

The Votrax **VSM/1'™** introduces a new level of computer speech module performance and flexibility. It removes the constraints imposed by small fixed vocabulary speech modules typically used by designers. The **VSM/1'™** is based on the truly synthetic speech technology of the SC-01.

The SC-01 is a completely self-contained solid state device which phonetically synthesizes speech from low data rate inputs. Over 1,300 industrial/engineering based words can be stored in as little as 8K bytes of ROM. By using the built in prefix/suffix table, a repertoire of several thousand words can be created. Additional vocabulary, tailored to the user's specific needs can be permanently configured on up to 8K bytes of EPROM via on board sockets.

Using the phoneme capabilities of the SC-01, along with the prestored words, the **VSM/1'™** can produce an unlimited vocabulary. Speech rate, pitch and pause controls can be dynamically programmed, via control codes, to produce stress patterns. By altering the master clock controls, many human voice effects can be programmed to simulate a multi-voice environment.

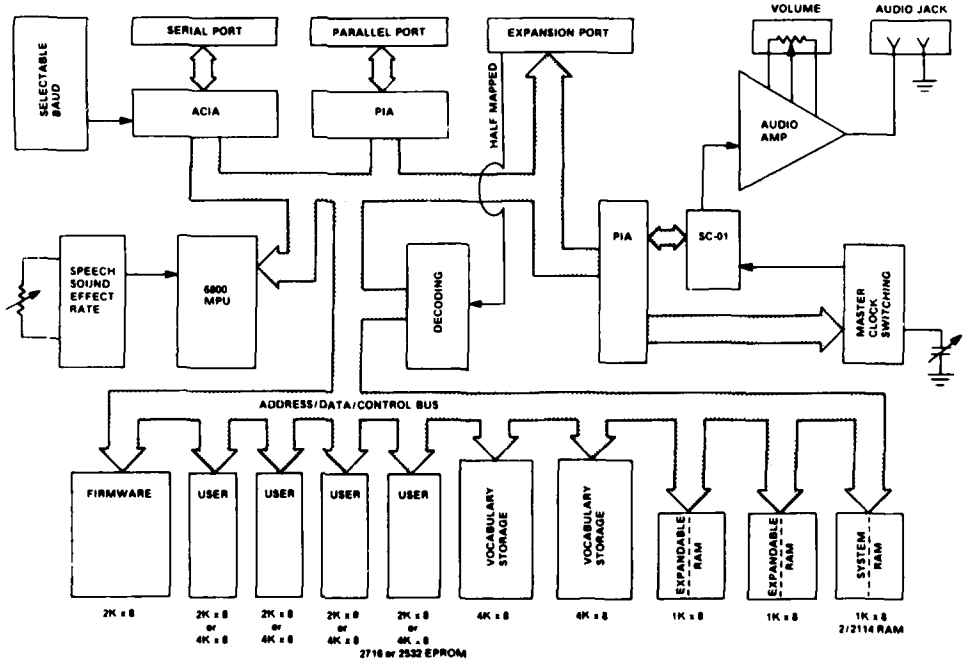

Figure 2. ***VSM/1'™*** *Flow Diagram*

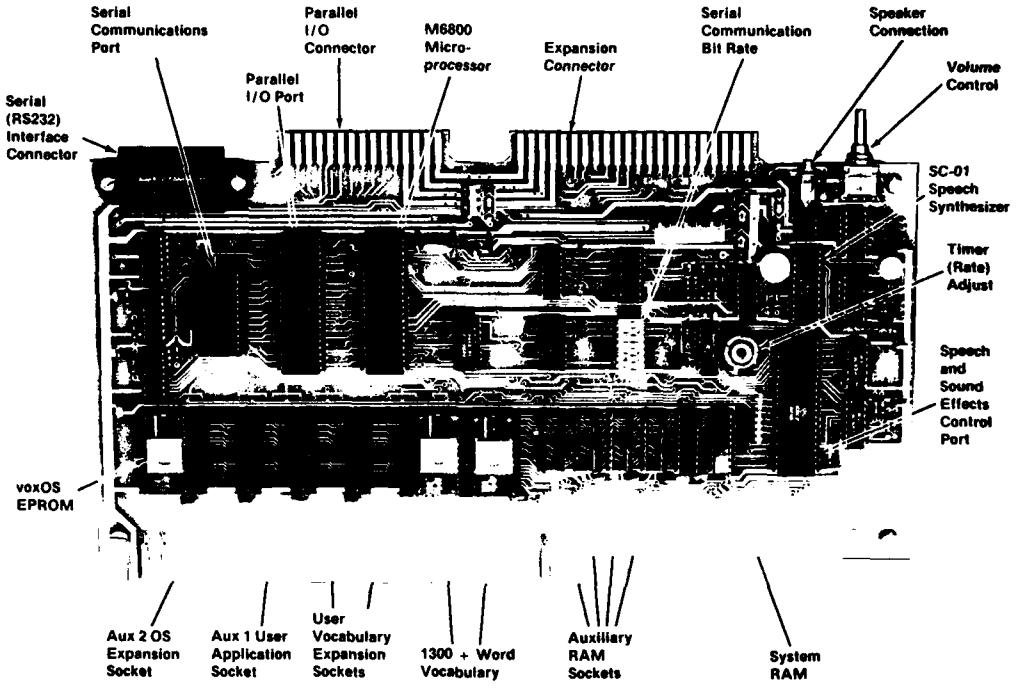

Figure 3. **Versatile Speech Module™** Circuit Card

The **VSM/1™** can produce a multitude of sound effects from prestored sound macros. Space sounds, gunfire, explosions, race cars and even musical sequences can be easily created. For additional flexibility, additional sound macros can be user defined and stored in the EPROM's.

The voice operating system (voxOS) may be user bypassed. The user can supply the necessary firmware to change the system function. This change, for example, can be from an experimental system to an actual application.

The **VSM/1™** has four audio sequence memories for loading speech callout codes, system controls, prestored speech and/or sound effects. System changes can be accomplished by placing a user supplied EPROM in one of the vacant card sockets on the **VSM/1™**

The **VSM/1™** can be used as a microcomputer to talk and execute commands, or as a smart peripheral that is expandable by interface ports. System functions can be changed by downloading a 6800 compatible code segment.

Votrax®

VERSATILE SPEECH MODULE™ – VSM/1

SPECIFICATIONS

General

- 1,300 + prestored vocabulary
- Prefix/suffix modifiers
- Phoneme mode
- Sound effects
- Speech stress
- Usable as a general purpose controller/simulator

Hardware

- SC-01 phoneme synthesizer
- Powerful 6800 MPU (microprocessor unit) based design
- Parallel and serial (RS232) interface (selectable baud rate of 75 - 9600 bits per second)
- 1K byte RAM (sockets for additional 2K bytes)
- 2K byte voxOS operating system
- 8K byte prestored vocabulary ROM
- Expansion sockets for an additional 8K bytes (2716) to 16K bytes (2532) of jumper selectable EPROM's
- On board audio amplifier, 8 ohm, 1 watt, with volume control
- Half memory plane expansion connector (32K locations out of 64K. Customer access to 32K locations via the microcomputer data address bus.)
- Form compatible with a popular microcomputer board
- Variable speech rate clock
- Variable master clock frequency circuitry for pitch control

voxOS

- Full feature byte oriented editor (insert, delete change and move data pointer)
- Computer and terminal prompting modes
- Phonemes, sound effects, controls and prestored speech may be intermixed in any audio sequence memory
- 4 audio sequence memories + 1 sound effects control memory (16 blocks of 8 parameters each)
- Memory dump
- Execute 6800 operating code sequence (for downloading or overriding operating system)
- 12 prestored sound macros (to provide basic waveshapes for user selection of features)
- 4 user definable sound macros (to reside in user supplied ROM firmware)
- 48 programmable MCRC (master clock resistor capacitor) settings for continuous dynamic manipulation of audio parameters (instantaneous course controls)
- 4 MCRC transitioned trim controls (slowly step toward target)
- voxOS bypass (to jump into user supplied firmware)

Audio Sequence Commands

- Prestored speech callout (16K byte direct access range)
- Two phoneme execution modes (fixed inflection and transitioned inflection)
- 4 fixed inflection levels (instant)
- 4 transitioned inflection levels (step)
- 16 sound effect (commands) control blocks (load control memory and pick 1 of the 16)
- 8 speech rates (will not affect sound effects)
- 8 pause durations
- 8 prompting sounds (canned sound effects)
- Prestored prefix/suffix word modifiers

Votrax®
Division of Federal Screw Works
500 Stephenson Highway, Troy, Michigan 48084
Phone (313) 588-2050

APPENDIX C

VOICE PROGRAM PLM-80 SOURCE CODE

```
/*   VOICE.DATA    11 DECEMBER 1981  REV 0    */
 /* 8000H=ORIGIN OF PGM ROM; 4000H= ORIGIN OF PGM RAM; B000H= VOCAB */
/* */
/*  DECLARATIONS FOR VOICE MODE TEST   */
/* */
DECLARE ( INIT1, INIT2, INIT3, INIT4, INIT5, INIT6,
   INIT7, INIT8, INIT9 ) LABEL;
DECLARE LIT LITERALLY 'LITERALLY';
DECLARE( V$MODE$PTR, DEST$PTR, DEST$FLAG$PTR, SOURCE$FLAG$PTR,
  WORD$LENGTH$PTR, PHONEME$LENGTH$PTR,  WI$PTR,
  W$TABLE$COUNT$PTR ) ADDRESS;
INIT1: V$MODE$PTR = 7435H;
       DEST$PTR = 7436H;
       DEST$FLAG$PTR = 7437H;
       SOURCE$FLAG$PTR = 7438H;
       WORD$LENGTH$PTR = 7439H;
       PHONEME$LENGTH$PTR = 743AH;
       WI$PTR = 743CH;
       W$TABLE$COUNT$PTR = 743DH;
DECLARE( V$MODE BASED V$MODE$PTR, DEST BASED DEST$PTR,
   DEST$FLAG BASED DEST$FLAG$PTR, SOURCE$FLAG BASED SOURCE$FLAG$PTR,
   WORD$LENGTH BASED WORD$LENGTH$PTR, PHONEME$LENGTH BASED
   PHONEME$LENGTH$PTR,
   WI BASED WI$PTR, W$TABLE$COUNT BASED W$TABLE$COUNT$PTR ) BYTE;
      W$TABLE$COUNT = 0;
DECLARE ( VI$PTR, WORD$START$LOC$PTR, WORD$END$LOC$PTR ) ADDRESS;
INIT2:   VI$PTR = 743EH;
       WORD$START$LOC$PTR = 7440H;
       WORD$END$LOC$PTR = 7442H;
DECLARE ( VI BASED VI$PTR, WORD$START$LOC BASED WORD$START$LOC$PTR,
   WORD$END$LOC BASED WORD$END$LOC$PTR ) ADDRESS;
DECLARE ( VOICE$MODE$TEST, SOURCE$FLAG$STORE, WORD$COUNTER,
    DESTINATION$FLAG$STORE, V$MODE$ERROR, STORE$MODE$TEST,
    V$MIN$CHAR$TEST, V$SPACE$CHAR$TEST, RAM$STORE,
    PHONEME$LENGTH$TEST, W$STORE ) LABEL;
/* */
DECLARE V$ERROR$HDR DATA ('** VOICE MODE FORMAT ERROR **');
/* */
DECLARE W$TABLE$PTR ADDRESS;
INIT3:   W$TABLE$PTR = 7444H;
DECLARE ( W$TABLE BASED W$TABLE$PTR)(200) BYTE;
   W$TABLE(0) = '0';
/* */
DECLARE MPU$TABLE$BUILD LIT '0E58H';
DECLARE SPACE$CHAR LITERALLY '20H';
DECLARE TRUE LITERALLY '0FFH', FALSE LITERALLY '0H';
/* */
DECLARE CC$PTR ADDRESS;
INIT4: CC$PTR = 6668H;
DECLARE CC BASED CC$PTR ADDRESS;
DECLARE CHAR$STORE$PTR ADDRESS;
   CHAR$STORE$PTR = 5D64H;
```

```
DECLARE (CHAR$STORE BASED CHAR$STORE$PTR)(2000) BYTE;
DECLARE OUTTABLE1$PTR ADDRESS;
   OUTTABLE1$PTR = 4F8AH;
DECLARE (OUTTABLE1 BASED OUTTABLE1$PTR)(2000) BYTE;
DECLARE TC1$PTR ADDRESS;
   TC1$PTR = 575CH;
DECLARE TC1 BASED TC1$PTR ADDRESS;
DECLARE MSGCOUNT1$PTR ADDRESS;
   MSGCOUNT1$PTR = 4E5EH;
DECLARE (MSGCOUNT1 BASED MSGCOUNT1$PTR)(150) ADDRESS;
    DO VI = 0 TO 149;
       MSGCOUNT1( VI ) = 0;
    END;
DECLARE WAITING1$PTR ADDRESS;
INIT5: WAITING1$PTR = 468BH;
DECLARE WAITING1 BASED WAITING1$PTR BYTE;
DECLARE OUT$TABLE$PTR ADDRESS;
   OUT$TABLE$PTR = 666BH;
DECLARE (OUT$TABLE BASED OUT$TABLE$PTR)(2000) BYTE;
DECLARE TC$PTR ADDRESS;
   TC$PTR = 6664H;
DECLARE TC BASED TC$PTR ADDRESS;
DECLARE MSG$COUNT$PTR ADDRESS;
   MSG$COUNT$PTR = 6534H;
DECLARE (MSG$COUNT BASED MSG$COUNT$PTR)(150) ADDRESS;
DECLARE WAITING$PTR ADDRESS;
   WAITING$PTR = 577AH;
DECLARE WAITING BASED WAITING$PTR BYTE;
/* */
/*   DECLARATIONS FOR WORD COUNTER   */
/* */
DECLARE ( SPELLING$MODE$FLAG$PTR,
   MSG$END$FLAG$PTR, WORD$MODE$FLAG$PTR, PHONEME$MODE$FLAG$PTR,
   PAUSE$FLAG$PTR, INV$CHAR$FLAG$PTR ) ADDRESS;
      SPELLING$MODE$FLAG$PTR = 7523H;
      MSG$END$FLAG$PTR = 7525H;
      WORD$MODE$FLAG$PTR = 7526H;
      PHONEME$MODE$FLAG$PTR = 7527H;
      PAUSE$FLAG$PTR = 7528H;
      INV$CHAR$FLAG$PTR = 7529H;
DECLARE ( SPELLING$MODE$FLAG BASED SPELLING$MODE$FLAG$PTR,
   MSG$END$FLAG BASED MSG$END$FLAG$PTR, WORD$MODE$FLAG BASED
   WORD$MODE$FLAG$PTR, PHONEME$MODE$FLAG BASED PHONEME$MODE$FLAG$PTR,
   PAUSE$FLAG BASED PAUSE$FLAG$PTR, INV$CHAR$FLAG BASED
   INV$CHAR$FLAG$PTR ) BYTE;
DECLARE ( WORD$BEGIN$LOC$PTR, WORD$COUNT$PTR,
   WORD$POINTER$LOC$PTR ) ADDRESS;
      WORD$BEGIN$LOC$PTR = 752AH;
      WORD$COUNT$PTR = 752CH;
      WORD$POINTER$LOC$PTR = 752EH;
DECLARE ( WORD$BEGIN$LOC BASED WORD$BEGIN$LOC$PTR,
   WORD$COUNT BASED WORD$COUNT$PTR, WORD$POINTER$LOC BASED
```

```
   WORD$POINTER$LOC$PTR ) ADDRESS;
DECLARE ( SPELLING$MODE$TEST, INC$WORD$COUNT, WORD$TERM$TEST,
    WORD$OVER$TEST, TABLE$LOOKUP,  PAUSE$FLAG$END$SET,
    SPACE$OVER$TEST, WORD$COUNT$TEST, WORD$BUFFER, INV$CHAR$FLAG$CHECK,
    PREFIX$SUFFIX$MODE$TEST, PHONEME$MODE$TEST, WORD$INIT ) LABEL;
/* */
DECLARE ETX$CHAR LITERALLY '03H';
DECLARE STAR$CHAR LITERALLY '2AH';
DECLARE DOLLAR$CHAR LITERALLY '24H';
DECLARE SLASH$CHAR LITERALLY '2FH';
DECLARE PERIOD$CHAR LITERALLY '2EH';
DECLARE HYPHEN$CHAR LITERALLY '2DH';
DECLARE POUND$CHAR LITERALLY '23H';
/* */
/* */
/*  DECLARATIONS FOR TABLE LOOKUP  */
/* */
DECLARE ( WORD$TABLE$SELECT, PREFIX$SUFFIX$LOOKUP, TAB$INIT,
    COMPUTE$LENGTH$PTR, WORD$COUNT$MATCH, WORD$CHAR$MATCH,
     RAM$COUNT$MATCH, RAM$CHAR$MATCH, COMPUTE$RAM$LENGTH$PTR,
    RAM$TABLE$LOOKUP, SPELLING$LOOKUP, COMPUTE$PS$LENGTH$PTR,
    PS$WORD$COUNT$MATCH, PS$WORD$CHAR$MATCH ) LABEL;
DECLARE TAB$MATCH$FLAG$PTR ADDRESS;
INIT6:   TAB$MATCH$FLAG$PTR = 7531H;
DECLARE TAB$MATCH$FLAG BASED TAB$MATCH$FLAG$PTR BYTE;
DECLARE ( TAB$PTR$PTR, PS$TAB$PTR$PTR,
  TAB$LENGTH$PTR$PTR, TAB$STRING$PTR$PTR ) ADDRESS;
INIT7:    TAB$PTR$PTR = 7532H;
          PS$TAB$PTR$PTR = 7534H;
          TAB$LENGTH$PTR$PTR = 756AH;
          TAB$STRING$PTR$PTR = 756CH;
DECLARE TAB$PTR BASED TAB$PTR$PTR ADDRESS;
DECLARE TAB$LOC ADDRESS;
TAB$INIT: TAB$LOC = 0B000H;
DECLARE ( TAB$LENGTH$PTR BASED TAB$LENGTH$PTR$PTR,
   PS$TAB$PTR BASED PS$TAB$PTR$PTR,
   TAB$STRING$PTR BASED TAB$STRING$PTR$PTR ) ADDRESS;
          PS$TAB$PTR = 3EBAH;
DECLARE (TAB BASED TAB$LOC)(4000) BYTE;
/* */
/*   DECLARATIONS FOR SPELLING LOOKUP   */
/* */
/* */
DECLARE SPELLING$WORD$BUFFER$PTR ADDRESS;
      SPELLING$WORD$BUFFER$PTR = 756EH;
DECLARE ( SPELLING$WORD$BUFFER BASED
   SPELLING$WORD$BUFFER$PTR)(100) BYTE;
DECLARE SPELLING$PTR$SELECT LABEL;
DECLARE ( SI$PTR, TI$PTR, INPUT$WORD$COUNT$PTR,
   SPELLING$TAB$PTR$PTR ) ADDRESS;
      SI$PTR = 75F6H;
      TI$PTR = 75F7H;
```

```
      INPUT$WORD$COUNT$PTR = 75F8H;
      SPELLING$TAB$PTR$PTR = 75F9H;
DECLARE ( SI BASED SI$PTR, TI BASED TI$PTR, INPUT$WORD$COUNT BASED
   INPUT$WORD$COUNT$PTR, SPELLING$TAB$PTR BASED
   SPELLING$TAB$PTR$PTR ) BYTE;
DECLARE SPELLING$TAB$LOC ADDRESS;
      SPELLING$TAB$LOC = 0EF70H;
DECLARE (SPELLING$TAB BASED SPELLING$TAB$LOC)(144) BYTE;
/* */
/* */
/*   DECLARATIONS FOR WORD BUFFER   */
/* */
DECLARE( VERIFY$MSG$STORE, VERIFY$MSG$OVER$TEST, WORD$ROM$FORMATTER,
 SPELLING$FORMATTER, PHONEME$FORMATTER, LOOKUP$MSG$STORE,
 LOOKUP$MSG$OVER$TEST,  PS$FORMATTER, RAM$FORMATTER ) LABEL;
DECLARE UI$PTR ADDRESS;
INIT8: UI$PTR = 75FDH;
DECLARE UI BASED UI$PTR BYTE;
DECLARE PAUSE$CHAR LIT '32H';
DECLARE OPOLL1 LIT '13BBH';
DECLARE RAM$PHONEME$LENGTH$PTR ADDRESS;
INIT9: RAM$PHONEME$LENGTH$PTR = 75FEH;
DECLARE RAM$PHONEME$LENGTH BASED RAM$PHONEME$LENGTH$PTR ADDRESS;
/* */
/* */
/* */
     GO TO 0004; /*  START OF POLLING PROGRAM   */
/* */
/*   MODULE NAME:  VOICE MODE TEST   */
/* */
VOICE$MODE$TEST: IF CC < 6 THEN GO TO MPU$TABLE$BUILD;
       V$MODE = CHAR$STORE(2);
       DEST = CHAR$STORE(6);
       DEST$FLAG = 0H;
       SOURCE$FLAG = 0H;
SOURCE$FLAG$STORE: IF V$MODE = 'V' OR V$MODE='W'  THEN
                        SOURCE$FLAG = V$MODE;
                     ELSE GO TO MPU$TABLE$BUILD;
            IF V$MODE <> SOURCE$FLAG THEN GO TO MPU$TABLE$BUILD;
DESTINATION$FLAG$STORE: IF DEST = 'T' OR DEST = 'V' OR DEST = 'W'
                              THEN DEST$FLAG = DEST;
         IF DEST = DEST$FLAG THEN GO TO STORE$MODE$TEST;
              ELSE GO TO V$MODE$ERROR;
V$MODE$ERROR: IF SOURCE$FLAG = 'V' THEN
     DO;
        DO VI = 1 TO 29;
           OUTTABLE1( TC1 + VI ) = V$ERRORHDR( VI - 1 );
        END;
        WAITING1 = WAITING1 + 1;
        TC1 = TC1 + 29;
        MSGCOUNT1( WAITING1 ) = 29;
     END;
```

```
        ELSE DO;
                DO VI = 1 TO 29;
                   OUT$TABLE( TC + VI ) = V$ERROR$HDR( VI - 1 );
                END;
                WAITING = WAITING + 1;
                TC = TC + 29;
                MSG$COUNT( WAITING ) = 29;
             END;
  GO TO MPU$TABLE$BUILD;
STORE$MODE$TEST: IF DEST$FLAG = 'W' THEN GO TO RAM$STORE;
V$MIN$CHAR$TEST: IF CC < 9 THEN GO TO V$MODE$ERROR;
V$SPACE$CHAR$TEST: IF CHAR$STORE(7) <> SPACE$CHAR THEN
                        GO TO V$MODE$ERROR;
                   WORD$END$LOC = 7;
                   GO TO WORD$COUNTER;
/* */
/*    STORE ALGORITHM    */
/* */
RAM$STORE: IF CC < 16 THEN GO TO V$MODE$ERROR;
    WORD$LENGTH = (CHAR$STORE(7) -30H)*10 + (CHAR$STORE(8) -30H);
      IF WORD$LENGTH <= 0 THEN GO TO V$MODE$ERROR;
      IF WORD$LENGTH > 15 THEN GO TO V$MODE$ERROR;
PHONEME$LENGTH$TEST:
     PHONEME$LENGTH = (CHAR$STORE(9) - 30H)*10
              + (CHAR$STORE(10) - 30H);
      IF PHONEME$LENGTH <= 0 THEN GO TO V$MODE$ERROR;
      IF PHONEME$LENGTH > 30 THEN GO TO V$MODE$ERROR;
      IF CC < WORD$LENGTH + PHONEME$LENGTH + 10 THEN
            GO TO V$MODE$ERROR;
      IF WORD$LENGTH + PHONEME$LENGTH + 2 > ( 199 - W$TABLE$COUNT)
         THEN GO TO V$MODE$ERROR;
W$STORE: W$TABLE( W$TABLE$COUNT ) = WORD$LENGTH;
         W$TABLE$COUNT = W$TABLE$COUNT + 1;
         DO WI = 1 TO WORD$LENGTH;
            W$TABLE( W$TABLE$COUNT + WI - 1 ) = CHAR$STORE( WI + 10 );
         END;
        W$TABLE$COUNT = W$TABLE$COUNT  + WORD$LENGTH;
         W$TABLE( W$TABLE$COUNT  ) = PHONEME$LENGTH;
         W$TABLE$COUNT = W$TABLE$COUNT + 1;
         DO WI = 1 TO PHONEME$LENGTH;
            W$TABLE( W$TABLE$COUNT + WI - 1 ) =
                CHAR$STORE( WI + WORD$LENGTH + 10 );
         END;
         W$TABLE$COUNT = W$TABLE$COUNT + PHONEME$LENGTH;
         W$TABLE(W$TABLE$COUNT) = '0';
         GO TO MPU$TABLE$BUILD;
/* */
/*   END OF VOICE MODE TEST   */
/* */
/* */
/* */
/*          MODULE NAME:  WORD COUNTER          */
```

```
/* */
/* */
WORD$COUNTER: WORD$START$LOC = WORD$END$LOC;
        WORD$BEGIN$LOC = WORD$START$LOC + 1 ;
/* */
SPACE$OVER$TEST: DO WHILE CHAR$STORE(WORD$BEGIN$LOC) = SPACE$CHAR;
      IF WORD$BEGIN$LOC < CC THEN WORD$BEGIN$LOC=WORD$BEGIN$LOC + 1;
         ELSE GO TO WORD$INIT;
                END;
/* */
WORD$INIT: WORD$COUNT = 0;
        SPELLING$MODE$FLAG = FALSE;
        WORD$MODE$FLAG = TRUE;
        PHONEME$MODE$FLAG = FALSE;
        WORD$POINTER$LOC = WORD$BEGIN$LOC;
        WORD$END$LOC = 0;
        MSG$END$FLAG = FALSE;
        TAB$PTR = 0H;
SPELLING$MODE$TEST: IF CHAR$STORE( WORD$BEGIN$LOC ) = DOLLAR$CHAR THEN
            DO;
              SPELLING$MODE$FLAG = TRUE;
              WORD$BEGIN$LOC = WORD$BEGIN$LOC + 1;
              WORD$POINTER$LOC = WORD$BEGIN$LOC;
              GO TO INC$WORD$COUNT;
            END;
PREFIX$SUFFIX$MODE$TEST: IF CHAR$STORE(WORD$BEGIN$LOC) = STAR$CHAR
        THEN DO;
               WORD$MODE$FLAG = FALSE;
               WORD$BEGIN$LOC = WORD$BEGIN$LOC + 1;
               WORD$POINTER$LOC = WORD$BEGIN$LOC;
               GO TO INC$WORD$COUNT;
             END;
PHONEME$MODE$TEST: IF CHAR$STORE(WORD$BEGIN$LOC) = POUND$CHAR THEN
             DO;
               PHONEME$MODE$FLAG = TRUE;
               WORD$BEGIN$LOC = WORD$BEGIN$LOC + 1;
               WORD$POINTER$LOC = WORD$BEGIN$LOC;
             END;
INC$WORD$COUNT: IF WORD$POINTER$LOC  < CC THEN
        WORD$COUNT = WORD$COUNT + 1;
        WORD$POINTER$LOC = WORD$POINTER$LOC + 1;
WORD$TERM$TEST: IF CHAR$STORE( WORD$POINTER$LOC ) = SPACE$CHAR THEN
          WORD$END$LOC = WORD$POINTER$LOC;
                IF CHAR$STORE( WORD$POINTER$LOC ) = PERIOD$CHAR THEN
          WORD$END$LOC = WORD$POINTER$LOC;
                IF CHAR$STORE( WORD$POINTER$LOC ) = SLASH$CHAR THEN
          WORD$END$LOC = WORD$POINTER$LOC;
                IF CHAR$STORE( WORD$POINTER$LOC ) = HYPHEN$CHAR THEN
          WORD$END$LOC = WORD$POINTER$LOC;
                IF CHAR$STORE( WORD$POINTER$LOC ) = ETX$CHAR THEN
          WORD$END$LOC = WORD$POINTER$LOC;
WORD$OVER$TEST:
```

```
      IF WORD$POINTER$LOC >= CC THEN
         DO;
           WORD$END$LOC = CC;
           MSG$END$FLAG = TRUE;
           GO TO PAUSE$FLAG$END$SET;
         END;
           IF WORD$END$LOC <> 0 THEN GO TO PAUSE$FLAG$END$SET;
         GO TO INC$WORD$COUNT;
PAUSE$FLAG$END$SET: IF CHAR$STORE(WORD$END$LOC) = SPACE$CHAR
           THEN PAUSE$FLAG = TRUE;
              ELSE PAUSE$FLAG = FALSE;
    IF CHAR$STORE(WORD$END$LOC) = PERIOD$CHAR THEN
       PAUSE$FLAG = TRUE;
WORD$COUNT$TEST: IF WORD$COUNT > 15 THEN SPELLING$MODE$FLAG = TRUE;
INV$CHAR$TEST: VI = WORD$BEGIN$LOC;
        IF SPELLING$MODE$FLAG = TRUE OR PHONEME$MODE$FLAG = TRUE THEN
          DO WHILE VI < WORD$END$LOC;
             INV$CHAR$FLAG = TRUE;
             IF CHAR$STORE(VI) >= 30H AND CHAR$STORE(VI) <= 39H THEN
                INV$CHAR$FLAG = FALSE;
             IF CHAR$STORE(VI) >= 41H AND CHAR$STORE(VI) <= 5AH THEN
                INV$CHAR$FLAG = FALSE;
             IF INV$CHAR$FLAG = TRUE THEN GO TO INV$CHAR$FLAG$CHECK;
             VI = VI + 1;
          END;
    ELSE  DO WHILE VI < WORD$END$LOC;
             INV$CHAR$FLAG = TRUE;
             IF CHAR$STORE(VI) >= 41H AND CHAR$STORE(VI) <= 5AH THEN
                INV$CHAR$FLAG = FALSE;
             IF INV$CHAR$FLAG = TRUE THEN GO TO INV$CHAR$FLAG$CHECK;
             VI = VI + 1;
          END;
 INV$CHAR$FLAG$CHECK: IF INV$CHAR$FLAG = FALSE THEN GO TO TABLE$LOOKUP;
       ELSE GO TO WORD$BUFFER;
/*     END OF WORD COUNTER        */
/* */
TABLE$LOOKUP: TAB$MATCH$FLAG = 0H;
       IF SPELLING$MODE$FLAG = TRUE THEN
                 GO TO SPELLING$LOOKUP;
       IF PHONEME$MODE$FLAG = TRUE THEN GO TO WORD$BUFFER;
       IF WORD$MODE$FLAG = FALSE THEN GO TO PREFIX$SUFFIX$LOOKUP;
/*  WORD ROM TABLE LOOKUP   */
/*  */
WORD$TABLE$SELECT: WI = CHAR$STORE(WORD$BEGIN$LOC) - 41H;
   DO CASE WI;
      TAB$PTR = TAB$PTR + 0000H;
      TAB$PTR = TAB$PTR + 03C8H;
      TAB$PTR = TAB$PTR + 0754H;
      TAB$PTR = TAB$PTR + 0D51H;
      TAB$PTR = TAB$PTR + 11AAH;
      TAB$PTR = TAB$PTR + 14BDH;
      TAB$PTR = TAB$PTR + 1868H;
```

```
        TAB$PTR = TAB$PTR + 1A70H;
        TAB$PTR = TAB$PTR + 1C51H;
        TAB$PTR = TAB$PTR + 1E8BH;
        TAB$PTR = TAB$PTR + 1F18H;
        TAB$PTR = TAB$PTR + 1F97H;
        TAB$PTR = TAB$PTR + 2171H;
        TAB$PTR = TAB$PTR + 24BFH;
        TAB$PTR = TAB$PTR + 2651H;
        TAB$PTR = TAB$PTR + 2857H;
        TAB$PTR = TAB$PTR + 2D0AH;
        TAB$PTR = TAB$PTR + 2DA8H;
        TAB$PTR = TAB$PTR + 30B9H;
        TAB$PTR = TAB$PTR + 3754H;
        TAB$PTR = TAB$PTR + 3AAFH;
        TAB$PTR = TAB$PTR + 3B22H;
        TAB$PTR = TAB$PTR + 3BDBH;
        TAB$PTR = TAB$PTR + 3DBBH;
        TAB$PTR = TAB$PTR + 3DEAH;
        TAB$PTR = TAB$PTR + 3E71H;
      END;
      INPUT$WORD$COUNT = WORD$COUNT + 30H;
COMPUTE$LENGTH$PTR: TAB$LENGTH$PTR = TAB$PTR;
       IF TAB( TAB$LENGTH$PTR ) = '0' THEN GO TO RAM$TABLE$LOOKUP;
WORD$COUNT$MATCH: IF INPUT$WORD$COUNT <> TAB( TAB$LENGTH$PTR ) THEN
              DO;
                 TAB$PTR = TAB$PTR + 5 + (TAB(TAB$LENGTH$PTR)-30H);
                 GO TO COMPUTE$LENGTH$PTR;
              END;
              TAB$STRING$PTR = TAB$LENGTH$PTR + 1;
WORD$CHAR$MATCH: VI = WORD$BEGIN$LOC;
         DO WHILE VI < WORD$END$LOC;
            IF CHAR$STORE( VI ) <> TAB(TAB$STRING$PTR) THEN
               DO;
                 TAB$PTR = TAB$PTR + 5 + (TAB(TAB$LENGTH$PTR)-30H);
                 GO TO COMPUTE$LENGTH$PTR;
               END;
            TAB$STRING$PTR = TAB$STRING$PTR + 1;
            VI = VI + 1;
         END;
         TAB$MATCH$FLAG = 01H;
         GO TO WORD$BUFFER;
/*  END OF WORD ROM TABLE LOOKUP   */
/* */
/*  PREFIX-SUFFIX TABLE LOOKUP   */
/* */
PREFIX$SUFFIX$LOOKUP: INPUT$WORD$COUNT = WORD$COUNT + 30H;
          TAB$PTR = TAB$PTR + PS$TAB$PTR;
COMPUTE$PS$LENGTH$PTR: TAB$LENGTH$PTR = TAB$PTR;
       IF TAB( TAB$LENGTH$PTR ) = '0' THEN GO TO RAM$TABLE$LOOKUP;
PS$WORD$COUNT$MATCH: IF INPUT$WORD$COUNT <> TAB(TAB$LENGTH$PTR) THEN
       DO;
           TAB$PTR = TAB$PTR + 3 + (TAB(TAB$LENGTH$PTR)-30H);
```

```
            GO TO COMPUTE$PS$LENGTH$PTR;
         END;
         TAB$STRING$PTR = TAB$LENGTH$PTR + 1;
PS$WORD$CHAR$MATCH: VI = WORD$BEGIN$LOC;
      DO WHILE VI < WORD$END$LOC;
         IF CHAR$STORE(VI) <> TAB( TAB$STRING$PTR ) THEN
            DO;
               TAB$PTR = TAB$PTR + 3 + (TAB(TAB$LENGTH$PTR)-30H);
               GO TO COMPUTE$PS$LENGTH$PTR;
            END;
         TAB$STRING$PTR = TAB$STRING$PTR + 1;
         VI = VI + 1;
      END;
      TAB$MATCH$FLAG = 02H;
      GO TO WORD$BUFFER;
/*  END OF PREFIX-SUFFIX TABLE LOOKUP   */
/* */
/*  RAM TABLE LOOKUP  */
/* */
RAM$TABLE$LOOKUP: INPUT$WORD$COUNT = WORD$COUNT;
                  TAB$PTR = 0;
COMPUTE$RAM$LENGTH$PTR: TAB$LENGTH$PTR = TAB$PTR;
      IF W$TABLE( TAB$LENGTH$PTR ) = '0' THEN
         DO;
           SPELLING$MODE$FLAG = TRUE;
           GO TO SPELLING$LOOKUP;
         END;
RAM$COUNT$MATCH: IF INPUT$WORD$COUNT <> W$TABLE(TAB$LENGTH$PTR) THEN
     DO;
       TAB$PTR = TAB$PTR + W$TABLE(TAB$LENGTH$PTR) + 1;
       TAB$PTR = TAB$PTR + W$TABLE(TAB$PTR) + 1;
       GO TO COMPUTE$RAM$LENGTH$PTR;
     END;
     TAB$STRING$PTR = TAB$LENGTH$PTR + 1;
RAM$CHAR$MATCH: VI = WORD$BEGIN$LOC;
   DO WHILE VI < WORD$END$LOC;
      IF CHAR$STORE(VI) <> W$TABLE(TAB$STRING$PTR) THEN
         DO;
           TAB$PTR = TAB$PTR + W$TABLE(TAB$LENGTH$PTR) + 1;
           TAB$PTR = TAB$PTR + W$TABLE(TAB$PTR) + 1;
           GO TO COMPUTE$RAM$LENGTH$PTR;
         END;
      TAB$STRING$PTR = TAB$STRING$PTR + 1;
      VI = VI + 1;
   END;
   TAB$MATCH$FLAG = 03H;
   GO TO WORD$BUFFER;
/*  END OF RAM TABLE LOOKUP  */
/* */
/* */
/*  SPELLING LOOKUP   */
/* */
```

```
SPELLING$LOOKUP: TI = 1;
                 VI = WORD$BEGIN$LOC;
SPELLING$PTR$SELECT:
    DO WHILE VI < WORD$END$LOC;
       IF CHAR$STORE(VI) >= 41H THEN
          DO;
             DO CASE CHAR$STORE(VI)-41H;
                SPELLING$TAB$PTR = 00H;
                SPELLING$TAB$PTR = 04H;
                SPELLING$TAB$PTR = 08H;
                SPELLING$TAB$PTR = 0CH;
                SPELLING$TAB$PTR = 10H;
                SPELLING$TAB$PTR = 14H;
                SPELLING$TAB$PTR = 18H;
                SPELLING$TAB$PTR = 1CH;
                SPELLING$TAB$PTR = 20H;
                SPELLING$TAB$PTR = 24H;
                SPELLING$TAB$PTR = 28H;
                SPELLING$TAB$PTR = 2CH;
                SPELLING$TAB$PTR = 30H;
                SPELLING$TAB$PTR = 34H;
                SPELLING$TAB$PTR = 38H;
                SPELLING$TAB$PTR = 3CH;
                SPELLING$TAB$PTR = 40H;
                SPELLING$TAB$PTR = 44H;
                SPELLING$TAB$PTR = 48H;
                SPELLING$TAB$PTR = 4CH;
                SPELLING$TAB$PTR = 50H;
                SPELLING$TAB$PTR = 54H;
                SPELLING$TAB$PTR = 58H;
                SPELLING$TAB$PTR = 5CH;
                SPELLING$TAB$PTR = 60H;
                SPELLING$TAB$PTR = 64H;
             END;
          END;
          ELSE
             DO;
                DO CASE CHAR$STORE(VI) - 30H;
                   SPELLING$TAB$PTR = 68H;
                   SPELLING$TAB$PTR = 6CH;
                   SPELLING$TAB$PTR = 70H;
                   SPELLING$TAB$PTR = 74H;
                   SPELLING$TAB$PTR = 78H;
                   SPELLING$TAB$PTR = 7CH;
                   SPELLING$TAB$PTR = 80H;
                   SPELLING$TAB$PTR = 84H;
                   SPELLING$TAB$PTR = 88H;
                   SPELLING$TAB$PTR = 8CH;
                END;
             END;
                DO SI = TI TO TI + 4;
      SPELLING$WORD$BUFFER( SI ) = SPELLING$TAB(SPELLING$TAB$PTR);
```

```
      SPELLING$TAB$PTR = SPELLING$TAB$PTR + 1;
                  END;
                   TI = TI + 4;
                   VI = VI + 1;
     END;
     GO TO WORD$BUFFER;
/* */
/* END OF SPELLING LOOKUP  */
/* */
/*  MODULE NAME:  WORD BUFFER  */
/* */
WORD$BUFFER: IF DEST$FLAG <> 'T' THEN GO TO VERIFY$MSG$STORE;
             ELSE GO TO LOOKUP$MSG$STORE;
VERIFY$MSG$STORE: IF SOURCE$FLAG = 'V' AND TAB$MATCH$FLAG = 0H THEN
   DO;
      DO VI = 1 TO WORD$COUNT;
         OUTTABLE1(TC1 + VI) = CHAR$STORE(WORD$BEGIN$LOC + VI - 1);
      END;
      OUTTABLE1(TC1 + WORD$COUNT + 1) = SPACE$CHAR;
      TC1 = TC1 + WORD$COUNT + 1;
      MSGCOUNT1(WAITING1+1) = MSGCOUNT1(WAITING1+1) + WORD$COUNT+1;
      IF MSG$END$FLAG = TRUE THEN WAITING1 = WAITING1 + 1;
   END;
      ELSE
       DO;
         IF SOURCE$FLAG = 'W' AND TAB$MATCH$FLAG = 0H THEN
           DO;
             DO VI = 1 TO WORD$COUNT;
               OUTTABLE(TC+VI) = CHAR$STORE(WORD$BEGIN$LOC + VI -1);
             END;
             OUTTABLE(TC + WORD$COUNT + 1) = SPACE$CHAR;
             TC = TC + WORD$COUNT + 1;
             MSG$COUNT(WAITING+1) = MSG$COUNT(WAITING+1)
                                    + WORD$COUNT + 1;
             IF MSG$END$FLAG = TRUE THEN WAITING = WAITING + 1;
           END;
        END;
VERIFY$MSG$OVER$TEST: IF MSG$END$FLAG = FALSE THEN GO TO WORD$COUNTER;
                  ELSE GO TO MPU$TABLE$BUILD;  /*  MAIN PROGRAM   */
LOOKUP$MSG$STORE: IF INV$CHAR$FLAG = TRUE THEN
                     GO TO LOOKUP$MSG$OVER$TEST;
   IF WORD$START$LOC = 7 THEN
      DO;
         OUTTABLE( TC+1 ) = 1BH;  /*   ASCII 'ESC' CHARACTER  */
         OUTTABLE( TC+2 ) = 1BH;
         OUTTABLE( TC+3 ) = 'T';
         OUTTABLE( TC+4 ) = 'K';
         TC = TC + 4;
         MSG$COUNT( WAITING+1 ) = MSG$COUNT( WAITING+1 ) + 4;
      END;
/*  SPELLING LOOKUP FORMATTER   */
   SPELLING$FORMATTER: IF SPELLING$MODE$FLAG = TRUE THEN
```

```
   DO;
      OUTTABLE( TC+1 ) = 'A';
      OUTTABLE( TC+2 ) = 'E';
      OUTTABLE( TC+3 ) = 'A';
      OUTTABLE( TC+4 ) = 'E';
      OUTTABLE( TC+5 ) = 'A';
      OUTTABLE( TC+6 ) = '2';
      TC = TC + 6;
      MSG$COUNT( WAITING+1 ) = MSG$COUNT( WAITING+1 ) + 6;
         DO UI = 1 TO TI-4 BY 4;
            DO SI = 1 TO 4;
               OUTTABLE(TC+SI) = SPELLING$WORD$BUFFER(UI+SI-1);
            END;
            OUTTABLE( TC+5 ) = 'A';
            OUTTABLE( TC+6 ) = PAUSE$CHAR;
            TC = TC + 6;
            MSG$COUNT(WAITING+1) = MSG$COUNT(WAITING+1) + 6;
         END;
      OUTTABLE( TC+1 ) = 'A';
      OUTTABLE( TC+2 ) = '2';
      OUTTABLE( TC+3 ) = 'A';
      OUTTABLE( TC+4 ) = 'F';
      OUTTABLE( TC+5 ) = 'A';
      OUTTABLE( TC+6 ) = PAUSE$CHAR;
      TC = TC + 6;
      MSG$COUNT( WAITING + 1 ) = MSG$COUNT( WAITING + 1 ) + 6;
      GO TO LOOKUP$MSG$OVER$TEST;
   END;
/*   PHONEME FORMATTER   */
/* */
PHONEME$FORMATTER: IF PHONEME$MODE$FLAG = TRUE THEN
   DO;
      DO VI = 1 TO WORD$COUNT;
         OUTTABLE(TC+VI) = CHAR$STORE(WORD$BEGIN$LOC + VI -1);
      END;
      TC = TC + WORD$COUNT;
      OUTTABLE( TC+1 ) = 'D';
      OUTTABLE( TC+2 ) = 'F';
      OUTTABLE( TC+3 ) = 'A';
      IF PAUSE$FLAG = FALSE THEN OUTTABLE( TC+4 ) = '0';
          ELSE OUTTABLE( TC+4 ) = PAUSE$CHAR;
      TC = TC + 4;
      MSG$COUNT(WAITING+1) = MSG$COUNT(WAITING+1) + WORD$COUNT +4;
      GO TO LOOKUP$MSG$OVER$TEST;
   END;
/*  WORD ROM LOOKUP FORMATTER   */
   WORD$ROM$FORMATTER: IF TAB$MATCH$FLAG = 01H THEN
   DO;
      DO VI = 1 TO 4;
         OUTTABLE( TC+VI ) = TAB( TAB$STRING$PTR + VI -1 );
      END;
      OUTTABLE( TC+5 ) = 'A';
```

```
      IF PAUSE$FLAG = FALSE THEN OUTTABLE( TC+6 ) = '0';
           ELSE OUTTABLE( TC+6 ) = PAUSE$CHAR;
      TC = TC + 6;
      MSG$COUNT( WAITING+1 ) = MSG$COUNT( WAITING+1 ) + 6;
      GO TO LOOKUP$MSG$OVER$TEST;
   END;
/*  PREFIX/SUFFIX ROM LOOKUP FORMATTER   */
   PS$FORMATTER: IF TAB$MATCH$FLAG = 02H THEN
   DO;
      DO VI = 1 TO 2;
         OUTTABLE( TC+VI ) = TAB(TAB$STRING$PTR + VI -1);
      END;
      OUTTABLE( TC+3 ) = 'A';
      IF PAUSE$FLAG = FALSE THEN OUTTABLE( TC+4 ) = '0';
         ELSE OUTTABLE( TC+4 ) = PAUSE$CHAR;
      TC = TC + 4;
      MSG$COUNT( WAITING+1 ) = MSG$COUNT( WAITING+1 ) + 4;
      GO TO LOOKUP$MSG$OVER$TEST;
   END;
/*   WORD RAM LOOKUP FORMATTER   */
   RAM$FORMATTER: IF TAB$MATCH$FLAG = 03H THEN
   DO;
      RAM$PHONEME$LENGTH = W$TABLE(TAB$STRING$PTR);
      OUTTABLE( TC+1 ) = '9';
      OUTTABLE( TC+2 ) = 'A';
      TC = TC + 2;
      DO VI = 1 TO RAM$PHONEME$LENGTH;
         OUTTABLE( TC+VI ) = W$TABLE( TAB$STRING$PTR+VI );
      END;
      TC = TC + RAM$PHONEME$LENGTH;
      OUTTABLE( TC+1 ) = 'F';
      OUTTABLE( TC+2 ) = 'F';
      OUTTABLE( TC+3 ) = 'A';
      IF PAUSE$FLAG = FALSE THEN OUTTABLE( TC+4 ) = '0';
         ELSE OUTTABLE( TC+4 ) = PAUSE$CHAR;
      TC = TC + 4;
      MSG$COUNT( WAITING+1 ) = MSG$COUNT( WAITING+1 )
            + RAM$PHONEME$LENGTH + 6;
   END;
LOOKUP$MSG$OVER$TEST: IF MSG$END$FLAG = TRUE THEN
      DO;
         OUTTABLE( TC+1 ) = 0DH; /*  CR  */
         OUTTABLE( TC+2 ) = 0AH; /*  LF  */
         TC = TC + 2;
         WAITING = WAITING + 1;
         MSG$COUNT( WAITING ) = MSG$COUNT( WAITING ) + 2;
         CC = 0;
         OUTPUT(233) = 10H;
         GO TO OPOLL1;  /*  MAIN PROGRAM   */
      END;
           ELSE GO TO WORD$COUNTER;
EOF
```

APPENDIX D

VOICE PROGRAM
8080A ASSEMBLY CODE INSTRUCTION LISTING

```
8000H LXI SP A6H     9BH     LXI H  A6H     9BH     MOV MI 35H     INX H
8009H MOV MI 74H     INR L   MOV MI 36H     INX H   MOV MI 74H     INR L
8012H MOV MI 37H     INX H   MOV MI 74H     INR L   MOV MI 38H     INX H
801BH MOV MI 74H     INR L   MOV MI 39H     INX H   MOV MI 74H     INR L
8024H MOV MI 3AH     INX H   MOV MI 74H     INR L   MOV MI 3CH     INX H
802DH MOV MI 74H     INR L   MOV MI 3DH     INX H   MOV MI 74H     LHLD
8036H B4H    9BH     MOV MI 00H     LXI H  B6H     9BH     MOV MI 3EH
803FH INX H  MOV MI 74H     INR L   MOV MI 40H     INX H   MOV MI 74H
8048H INR L  MOV MI 42H     INX H   MOV MI 74H     JMP     6EH     80H
8051H 2AH 2AH 20H 56H 4FH 49H 43H 45H 20H 4DH 4FH 44H 45H 20H 46H 4FH
8061H 52H 4DH 41H 54H 20H 45H 52H 52H 4FH 52H 20H 2AH 2AH
806EH LXI H  BCH     9BH     MOV MI 44H     INX H   MOV MI 74H     LHLD
8077H BCH    9BH     MOV MI 30H     LXI H  BEH     9BH     MOV MI 68H
8080H INX H  MOV MI 66H     INR L   MOV MI 64H     INX H   MOV MI 5DH
8089H INR L  MOV MI 8AH     INX H   MOV MI 4FH     INR L   MOV MI 5CH
8092H INX H  MOV MI 57H     INR L   MOV MI 5EH     INX H   MOV MI 4EH
809BH LHLD   B6H     9BH     MOV MI 00H     INX H   MOV MI 00H     LHLD
80A4H B6H    9BH     MOV AM INX H   MOV BM MOV CA MOV AI 95H     SUB C
80ADH MOV EA MOV AI 00H     SBC B   JC      D9H     80H     DCX H  MOV AM
80B6H INX H  MOV BM MOV CA LHLD    C6H     9BH     DAD B   DAD B  MOV MI
80BFH 00H    INX H   MOV MI 00H     LHLD    B6H     9BH     MOV AM INX H
80C8H MOV BM MOV CA LXI H  01H     00H     DAD B   XCHG    LHLD   B6H
80D1H 9BH    MOV ME INX H   MOV MI 00H     JMP     A3H     80H     LXI H
80DAH C8H    9BH     MOV MI 8BH     INX H   MOV MI 46H     INR L  MOV MI
80E3H 6BH    INX H   MOV MI 66H     INR L   MOV MI 64H     INX H  MOV MI
80ECH 66H    INR L   MOV MI 34H     INX H   MOV MI 65H     INR L  MOV MI
80F5H 7AH    INX H   MOV MI 57H     INR L   MOV MI 23H     INX H  MOV MI
80FEH 75H    INR L   MOV MI 25H     INX H   MOV MI 75H     INR L  MOV MI
8107H 26H    INX H   MOV MI 75H     INR L   MOV MI 27H     INX H  MOV MI
8110H 75H    INR L   MOV MI 28H     INX H   MOV MI 75H     INR L  MOV MI
8119H 29H    INX H   MOV MI 75H     INR L   MOV MI 2AH     INX H  MOV MI
8122H 75H    INR L   MOV MI 2CH     INX H   MOV MI 75H     INR L  MOV MI
812BH 2EH    INX H   MOV MI 75H     LXI H  E4H     9BH     MOV MI 31H
8134H INX H  MOV MI 75H     LXI H  E6H     9BH     MOV MI 32H     INX H
```

```
813DH MOV MI 75H    INR L   MOV MI 34H    INX H   MOV MI 75H    INR L
8146H MOV MI 6AH    INX H   MOV MI 75H    INR L   MOV MI 6CH    INX H
814FH MOV MI 75H    LXI H   EEH    9BH     MOV MI 00H    INX H   MOV MI
8158H B0H    LHLD   E8H    9BH     MOV MI BAH    INX H   MOV MI 3EH
8161H LXI H  F0H    9BH     MOV MI 6EH    INX H   MOV MI 75H    INR L
816AH MOV MI F6H    INX H   MOV MI 75H    INR L   MOV MI F7H    INX H
8173H MOV MI 75H    INR L   MOV MI F8H    INX H   MOV MI 75H    INR L
817CH MOV MI F9H    INX H   MOV MI 75H    INR L   MOV MI 70H    INX H
8185H MOV MI EFH    LXI H   FCH    9BH     MOV MI FDH    INX H   MOV MI
818EH 75H    LXI H  FEH    9BH     MOV MI FEH    INX H   MOV MI 75H
8197H JMP    04H    00H    LHLD    BEH    9BH     MOV AM INX H   MOV BM
81A0H SUB I  06H    MOV CA MOV AB  SBC I  00H    JNC     ACH    81H
81A9H JMP    58H    0EH    LXI B   02H    00H    LHLD    C0H    9BH
81B2H DAD B  MOV AM LHLD   A6H    9BH     MOV MA LXI B  06H    00H
81BBH LHLD   C0H    9BH    DAD B   MOV AM LHLD   A8H    9BH    MOV MA
81C4H LHLD   AAH    9BH    MOV MI  00H    LHLD   ACH    9BH    MOV MI
81CDH 00H    LHLD   A6H    9BH     MOV AM SUB I  56H    SUB I  01H
81D6H SBC A  MOV CA MOV AM  SUB I  57H    SUB I  01H    SBC A  ORA C
81DFH RRC    JNC    EBH    81H     MOV AM LHLD   ACH    9BH    MOV MA
81E8H JMP    EEH    81H    JMP     58H    0EH    LHLD   A6H    9BH
81F1H MOV AM LHLD   ACH    9BH     MOV CA MOV AM SUB C  JZ     FEH
81FAH 81H    JMP    58H    0EH     LHLD   A8H    9BH    MOV AM SUB I
8203H 54H    SUB I  01H    SBC A   MOV CA MOV AM SUB I  56H    SUB I
820CH 01H    SBC A  ORA C  MOV EA  MOV AM SUB I  57H    SUB I  01H
8215H SBC A  ORA E  RRC    JNC     20H    82H    MOV AM LHLD   AAH
821EH 9BH    MOV MA LHLD   A8H     9BH    MOV AM LHLD   AAH    9BH
8227H MOV CA MOV AM SUB C  JZ      45H    83H    JMP    30H    82H
8230H LHLD   ACH    9BH    MOV AM  SUB I  56H    JNZ    BFH    82H
8239H LHLD   B6H    9BH    MOV MI  01H    INX H  MOV MI 00H    LHLD
8242H B6H    9BH    MOV AM INX H   MOV BM MOV CA MOV AI 1DH    SUB C
824BH MOV EA MOV AI 00H    SBC B   JC     91H    82H    LHLD   C4H
8254H 9BH    MOV AM INX H   MOV BM LHLD   B6H    9BH    MOV CA MOV AM
825DH INX H  MOV DM MOV EA XCHG    DAD B   XCHG   LHLD   C2H    9BH
8266H DAD D  XCHG   LHLD   B6H     9BH    MOV AM INX H  MOV BM MOV CA
```

```
826FH PUSH D MOV LC MOV HB DCX H  XCHG   LXI H  51H    80H    DAD D
8278H MOV AM POP H  MOV MA LHLD   B6H    9BH    MOV AM INX H  MOV BM
8281H MOV CA LXI H  01H    00H    DAD B  XCHG   LHLD   B6H    9BH
828AH MOV ME INX H  MOV MI 00H    JMP    41H    82H    LHLD   C8H
8293H 9BH     MOV AM INR A  MOV MA LHLD   C4H    9BH    MOV AM INX H
829CH MOV BM MOV CA LXI D  1DH    00H    MOV LC MOV HB DAD D  XCHG
82A5H LHLD    C4H    9BH    MOV ME INX H  MOV MD LHLD   C8H    9BH
82AEH MOV AM MOV CA MOV BI 00H    LHLD   C6H    9BH    DAD B  DAD B
82B7H MOV MI 1DH    INX H  MOV MI 00H    JMP    42H    83H    LHLD
82C0H B6H     9BH    MOV MI 01H    INX H  MOV MI 00H    LHLD   B6H
82C9H 9BH     MOV AM INX H  MOV BM MOV CA MOV AI 1DH    SUB C  MOV EA
82D2H MOV AI 00H    SBC B  JC     17H    83H    LHLD   CCH    9BH
82DBH MOV AM INX H  MOV BM LHLD   B6H    9BH    MOV CA MOV AM INX H
82E4H MOV DM MOV EA XCHG   DAD B  XCHG   LHLD   CAH    9BH    DAD D
82EDH XCHG    LHLD   B6H    9BH    MOV AM INX H  MOV BM MOV CA PUSH D
82F6H MOV LC MOV HB DCX H  XCHG   LXI H  51H    80H    DAD D  MOV AM
82FFH POP H  MOV MA LHLD   B6H    9BH    MOV AM INX H  MOV BM MOV CA
8308H LXI H  01H    00H    DAD B  XCHG   LHLD   B6H    9BH    MOV ME
8311H INX H  MOV MI 00H    JMP    C7H    82H    LHLD   D0H    9BH
831AH MOV AM INR A  MOV MA LHLD   CCH    9BH    MOV AM INX H  MOV BM
8323H MOV CA LXI D  1DH    00H    MOV LC MOV HB DAD D  XCHG   LHLD
832CH CCH     9BH    MOV ME INX H  MOV MD LHLD   D0H    9BH    MOV AM
8335H MOV CA MOV BI 00H    LHLD   CEH    9BH    DAD B  DAD B  MOV MI
833EH 1DH     INX H  MOV MI 00H    JMP    58H    0EH    LHLD   AAH
8347H 9BH     MOV AM SUB I  57H    JZ     75H    83H    LHLD   BEH
8350H 9BH     MOV AM INX H  MOV BM SUB I  09H    MOV CA MOV AB SBC I
8359H 00H     JC     30H    82H    LXI B  07H    00H    LHLD   C0H
8362H 9BH     DAD B  MOV AM SUB I  20H    JNZ    30H    82H    LHLD
836BH BAH     9BH    MOV MI 07H    INX H  MOV MI 00H    JMP    30H
8374H 85H     LHLD   BEH    9BH    MOV AM INX H  MOV BM SUB I  10H
837DH MOV CA MOV AB SBC I  00H    JC     30H    82H    LXI B  07H
8386H 00H     LHLD   C0H    9BH    DAD B  MOV AM SUB I  30H    MOV CA
838FH MOV EI 0AH    MOV DI 00H    MOV BI 00H    JMP    BBH    83H
8398H MOV AC SUB E  MOV AB SBC D  JP     A4H    83H    MOV HB MOV LC
```

```
83A1H XCHG   MOV BH MOV CL LXI H  00H    00H    XCHG   MOV AB ORA C
83AAH RZ     XCHG   MOV AB RAR    MOV BA MOV AC RAR    MOV CA JNC
83B3H B6H    83H    DAD D  XCHG   DAD H  JMP    A8H    83H    CALL
83BCH 98H    83H    PUSH D LXI B  08H    00H    LHLD   C0H    9BH
83C5H DAD B  MOV AM SUB I  30H    MOV CA MOV BI 00H    POP H  DAD B
83CEH XCHG   LHLD   AEH    9BH    MOV ME MOV AM MOV CA XRA A  SUB C
83D7H JNC    30H    82H    LHLD   AEH    9BH    MOV AM MOV CA MOV AI
83E0H 0FH    SUB C  JC     30H    82H    LXI B  09H    00H    LHLD
83E9H C0H    9BH    DAD B  MOV AM SUB I  30H    MOV CA MOV EI 0AH
83F2H MOV DI 00H    MOV BI 00H    CALL   98H    83H    PUSH D LXI B
83FBH 0AH    00H    LHLD   C0H    9BH    DAD B  MOV AM SUB I  30H
8404H MOV CA MOV BI 00H    POP H  DAD B  XCHG   LHLD   B0H    9BH
840DH MOV ME MOV AM MOV CA XRA A  SUB C  JNC    30H    82H    LHLD
8416H B0H    9BH    MOV AM MOV CA MOV AI 1EH    SUB C  JC     30H
841FH 82H    LHLD   BEH    9BH    MOV AM INX H  MOV BM LHLD   AEH
8428H 9BH    MOV CA MOV AM PUSH B LHLD   B0H    9BH    MOV EA MOV AM
8431H ADD E  ADD I  0AH    POP D  MOV CA MOV AE SUB C  MOV EA MOV AD
843AH SBC I  00H    JC     30H    82H    LHLD   AEH    9BH    MOV AM
8443H LHLD   B0H    9BH    MOV CA MOV AM ADD C  ADD I  02H    LHLD
844CH B4H    9BH    MOV EA MOV AM PUSH D MOV CA MOV AI C7H    SUB C
8455H POP B  SUB C  JC     30H    82H    LHLD   B4H    9BH    MOV AM
845EH MOV CA MOV BI 00H    LHLD   BCH    9BH    DAD B  XCHG   LHLD
8467H AEH    9BH    MOV AM STAX D LHLD   B4H    9BH    MOV AM INR A
8470H MOV MA LHLD   B2H    9BH    MOV MI 01H    LHLD   B2H    9BH
8479H MOV AM LHLD   AEH    9BH    MOV CA MOV AM SUB C  JC     B0H
8482H 84H    LHLD   B4H    9BH    MOV AM LHLD   B2H    9BH    MOV CA
848BH MOV AM ADD C  DCR A  MOV EA MOV DI 00H    LHLD   BCH    9BH
8494H DAD D  XCHG   LHLD   B2H    9BH    MOV AM ADD I  0AH    MOV CA
849DH PUSH D MOV BI 00H    LHLD   C0H    9BH    DAD B  MOV AM POP H
84A6H MOV MA LHLD   B2H    9BH    MOV AM INR A  MOV MA JNZ    76H
84AFH 84H    LHLD   B4H    9BH    MOV AM LHLD   AEH    9BH    MOV CA
84B8H MOV AM ADD C  LHLD   B4H    9BH    MOV MA MOV CA MOV BI 00H
84C1H LHLD   BCH    9BH    DAD B  XCHG   LHLD   B0H    9BH    MOV AM
84CAH STAX D LHLD   B4H    9BH    MOV AM INR A  MOV MA LHLD   B2H
```

```
84D3H 9BH     MOV MI 01H     LHLD   B2H     9BH     MOV AM LHLD   B0H
84DCH 9BH     MOV CA MOV AM SUB C   JC      16H     85H    LHLD   B4H
84E5H 9BH     MOV AM LHLD   B2H     9BH     MOV CA MOV AM ADD C  DCR A
84EEH MOV EA MOV DI 00H     LHLD   BCH     9BH     DAD D  XCHG   LHLD
84F7H B2H     9BH     MOV AM PUSH D LHLD   AEH     9BH    MOV CA MOV AM
8500H ADD C   ADD I   0AH     MOV EA MOV DI 00H     LHLD   C0H    9BH
8509H DAD D   MOV AM POP H   MOV MA LHLD   B2H     9BH    MOV AM INR A
8512H MOV MA  JNZ     D6H     84H    LHLD   B4H     9BH    MOV AM LHLD
851BH B0H     9BH     MOV CA MOV AM ADD C  LHLD   B4H     9BH    MOV MA
8524H MOV CA  MOV BI  00H     LHLD   BCH     9BH     DAD B  MOV MI 30H
852DH JMP     58H     0EH     LHLD   BAH     9BH     MOV AM INX H  MOV BM
8536H LHLD    B8H     9BH     MOV MA INX H  MOV MB DCX H  MOV AM INX H
853FH MOV BM  MOV CA  MOV LC  MOV HB INX H  XCHG   LHLD   DEH    9BH
8548H MOV ME  INX H   MOV MD  LHLD   DEH     9BH     MOV AM INX H  MOV BM
8551H MOV CA  LHLD    C0H     9BH    DAD B  MOV AM SUB I  20H    JNZ
855AH 89H     85H     LHLD   DEH     9BH     MOV AM INX H  MOV BM LHLD
8563H BEH     9BH     MOV CA MOV AM INX H  MOV DM MOV EA MOV AC SUB E
856CH MOV CA  MOV AB  SBC D  JNC     86H     85H    LHLD   DEH    9BH
8575H MOV AM  INX H   MOV BM MOV CA MOV LC MOV HB INX H  XCHG   LHLD
857EH DEH     9BH     MOV ME INX H  MOV MD JMP     4BH    85H    JMP
8587H 89H     85H     LHLD   E0H     9BH     MOV MI 00H    INX H  MOV MI
8590H 00H     LHLD    D2H     9BH    MOV MI 00H     LHLD   D6H    9BH
8599H MOV MI  FFH     LHLD   D8H     9BH     MOV MI 00H    LHLD   DEH
85A2H 9BH     MOV AM  INX H  MOV BM LHLD   E2H     9BH    MOV MA INX H
85ABH MOV MB  LHLD    BAH     9BH    MOV MI 00H     INX H  MOV MI 00H
85B4H LHLD    D4H     9BH     MOV MI 00H     LHLD   E6H    9BH    MOV MI
85BDH 00H     INX H   MOV MI 00H     LHLD   DEH     9BH    MOV AM INX H
85C6H MOV BM  MOV CA  LHLD   C0H     9BH     DAD B  MOV AM SUB I  24H
85CFH JNZ     F5H     85H    LHLD   D2H     9BH     MOV MI FFH    LHLD
85D8H DEH     9BH     MOV AM INX H  MOV BM MOV CA MOV LC MOV HB INX H
85E1H XCHG    LHLD    DEH     9BH    MOV ME INX H  MOV MD DCX H  MOV AM
85EAH INX H   MOV BM  LHLD   E2H     9BH     MOV MA INX H  MOV MB JMP
85F3H 5AH     86H     LHLD   DEH     9BH     MOV AM INX H  MOV BM MOV CA
85FCH LHLD    C0H     9BH    DAD B  MOV AM SUB I  2AH    JNZ    29H
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8605H 86H     LHLD    D6H     9BH     MOV MI 00H     LHLD    DEH     9BH
860EH MOV AM  INX H   MOV BM  MOV CA  MOV LC MOV HB  INX H   XCHG    LHLD
8617H DEH     9BH     MOV ME  INX H   MOV MD DCX H   MOV AM  INX H   MOV BM
8620H LHLD    E2H     9BH     MOV MA  INX H  MOV MB  JMP     5AH     86H
8629H LHLD    DEH     9BH     MOV AM  INX H  MOV BM  MOV CA  LHLD    C0H
8632H 9BH     DAD B   MOV AM  SUB I   23H    JNZ     5AH     86H     LHLD
863BH D8H     9BH     MOV MI  FFH     LHLD   DEH     9BH     MOV AM  INX H
8644H MOV BM  MOV CA  MOV LC  MOV HB  INX H  XCHG    LHLD    DEH     9BH
864DH MOV ME  INX H   MOV MD  DCX H   MOV AM INX H   MOV BM  LHLD    E2H
8656H 9BH     MOV MA  INX H   MOV MB  LHLD   E2H     9BH     MOV AM  INX H
865FH MOV BM  LHLD    BEH     9BH     MOV CA MOV AM  INX H   MOV DM  MOV EA
8668H MOV AC  SUB E   MOV CA  MOV AB  SBC D  JNC     81H     86H     LHLD
8671H E0H     9BH     MOV AM  INX H   MOV BM MOV CA  MOV LC  MOV HB  INX H
867AH XCHG    LHLD    E0H     9BH     MOV ME INX H   MOV MD  LHLD    E2H
8683H 9BH     MOV AM  INX H   MOV BM  MOV CA MOV LC  MOV HB  INX H   XCHG
868CH LHLD    E2H     9BH     MOV ME  INX H  MOV MD  LHLD    E2H     9BH
8695H MOV AM  INX H   MOV BM  MOV CA  LHLD   C0H     9BH     DAD B   MOV AM
869EH SUB I   20H     JNZ     AFH     86H    LHLD    E2H     9BH     MOV AM
86A7H INX H   MOV BM  LHLD    BAH     9BH    MOV MA  INX H   MOV MB  LHLD
86B0H E2H     9BH     MOV AM  INX H   MOV BM MOV CA  LHLD    C0H     9BH
86B9H DAD B   MOV AM  SUB I   2EH     JNZ    CCH     86H     LHLD    E2H
86C2H 9BH     MOV AM  INX H   MOV BM  LHLD   BAH     9BH     MOV MA  INX H
86CBH MOV MB  LHLD    E2H     9BH     MOV AM INX H   MOV BM  MOV CA  LHLD
86D4H C0H     9BH     DAD B   MOV AM  SUB I  2FH     JNZ     E9H     86H
86DDH LHLD    E2H     9BH     MOV AM  INX H  MOV BM  LHLD    BAH     9BH
86E6H MOV MA  INX H   MOV MB  LHLD    E2H    9BH     MOV AM  INX H   MOV BM
86EFH MOV CA  LHLD    C0H     9BH     DAD B  MOV AM  SUB I   2DH     JNZ
86F8H 06H     87H     LHLD    E2H     9BH    MOV AM  INX H   MOV BM  LHLD
8701H BAH     9BH     MOV MA  INX H   MOV MB LHLD    E2H     9BH     MOV AM
870AH INX H   MOV BM  MOV CA  LHLD    C0H    9BH     DAD B   MOV AM  SUB I
8713H 03H     JNZ     23H     87H     LHLD   E2H     9BH     MOV AM  INX H
871CH MOV BM  LHLD    BAH     9BH     MOV MA INX H   MOV MB  LHLD    E2H
8725H 9BH     MOV AM  INX H   MOV BM  LHLD   BEH     9BH     MOV CA  MOV AM
872EH INX H   MOV DM  MOV EA  MOV AC  SUB E  MOV CA  MOV AB  SBC D   JC
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8737H 4BH    87H    DCX H  MOV AM INX H  MOV BM LHLD   BAH    9BH
8740H MOV MA INX H  MOV MB LHLD   D4H    9BH    MOV MI FFH    JMP
8749H 5EH    87H    LHLD   BAH    9BH    MOV AM INX H  MOV BM SUB I
8752H 00H    MOV CA MOV AB SBC I  00H    ORA C  JNZ    5EH    87H
875BH JMP    5AH    86H    LHLD   BAH    9BH    MOV AM INX H  MOV BM
8764H MOV CA LHLD   C0H    9BH    DAD B  MOV AM SUB I  20H    JNZ
876DH 77H    87H    LHLD   DAH    9BH    MOV MI FFH    JMP    7CH
8776H 87H    LHLD   DAH    9BH    MOV MI 00H    LHLD   BAH    9BH
877FH MOV AM INX H  MOV BM MOV CA LHLD   C0H    9BH    DAD B  MOV AM
8788H SUB I  2EH    JNZ    92H    87H    LHLD   DAH    9BH    MOV MI
8791H FFH    LHLD   E0H    9BH    MOV AM INX H  MOV BM MOV CA MOV AI
879AH 0FH    SUB C  MOV EA MOV AI 00H    SBC B  JNC    A8H    87H
87A3H LHLD   D2H    9BH    MOV MI FFH    LHLD   DEH    9BH    MOV AM
87ACH INX H  MOV BM LHLD   B6H    9BH    MOV MA INX H  MOV MB LHLD
87B5H D2H    9BH    MOV AM SUB I  FFH    SUB J  01H    SBC A  LHLD
87BEH D8H    9BH    MOV CA MCV AM SUB I  FFH    SUB I  01H    SBC A
87C7H ORA C  RRC    JNC    62H    88H    LHLD   B6H    9BH    MOV AM
87D0H INX H  MOV BM LHLD   BAH    9BH    MOV CA MOV AM INX H  MOV DM
87D9H MOV EA MOV AC SUB E  MOV CA MOV AB SBC D  JNC    C9H    88H
87E2H LHLD   DCH    9BH    MOV MI FFH    LHLD   B6H    9BH    MOV AM
87EBH INX H  MOV BM MOV CA LHLD   C0H    9BH    DAD B  MOV AM SUB I
87F4H 30H    SBC A  CMA    LHLD   B6H    9BH    MOV CA MOV AM INX H
87FDH MOV DM MOV EA LHLD   C0H    9BH    DAD D  MOV AM PUSH B MOV EA
8806H MOV AI 39H    SUB E  POP D  SBC A  CMA    ANA E  RRC    JNC
880FH 16H    88H    LHLD   DCH    9BH    MOV MI 00H    LHLD   B6H
8818H 9BH    MOV AM INX H  MOV BM MOV CA LHLD   C0H    9BH    DAD B
8821H MOV AM SUB I  41H    SBC A  CMA    LHLD   B6H    9BH    MOV CA
882AH MOV AM INX H  MOV DM MOV EA LHLD   C0H    9BH    DAD D  MOV AM
8833H PUSH B MOV EA MOV AI 5AH    SUB E  POP D  SBC A  CMA    ANA E
883CH RRC    JNC    45H    88H    LHLD   DCH    9BH    MOV MI 00H
8845H LHLD   DCH    9BH    MOV AM SUB I  FFH    JZ     C9H    88H
884EH LHLD   B6H    9BH    MOV AM INX H  MOV BM MOV CA MOV LC MOV HB
8857H INX H  XCHG   LHLD   B6H    9BH    MOV ME INX H  MOV MD JMP
8860H CCH    87H    LHLD   B6H    9BH    MOV AM INX H  MOV BM LHLD
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8869H BAH    9BH    MOV CA MOV AM INX H  MOV DM MOV EA MOV AC SUB E
8872H MOV CA MOV AB SBC D  JNC    C9H    88H    LHLD   DCH    9BH
887BH MOV MI FFH    LHLD   B6H    9BH    MOV AM INX H  MOV BM MOV CA
8884H LHLD   COH    9BH    DAD B  MOV AM SUB I  41H    SBC A  CMA
888DH LHLD   B6H    9BH    MOV CA MOV AM INX H  MOV DM MOV EA LHLD
8896H COH    9BH    DAD D  MOV AM PUSH B MOV EA MOV AI 5AH    SUB E
889FH POP D  SBC A  CMA    ANA E  RRC    JNC    ACH    88H    LHLD
88A8H DCH    9BH    MOV MI OOH    LHLD   DCH    9BH    MOV AM SUB I
88B1H FFH    JZ     C9H    88H    LHLD   B6H    9BH    MOV AM INX H
88BAH MOV BM MOV CA MOV LC MOV HB INX H  XCHG   LHLD   B6H    9BH
88C3H MOV ME INX H  MOV MD JMP    62H    88H    LHLD   DCH    9BH
88CCH MOV AM SUB I  OOH    JNZ    D8H    88H    JMP    DBH    88H
88D5H JMP    DBH    88H    JMP    34H    91H    LHLD   E4H    9BH
88DEH MOV MI OOH    LHLD   D2H    9BH    MOV AM SUB I  FFH    JZ
88E7H F9H    8EH    LHLD   D8H    9BH    MOV AM SUB I  FFH    JZ
88FOH 34H    91H    LHLD   D6H    9BH    MOV AM SUB I  OOH    JZ
88F9H 82H    8CH    LHLD   DEH    9BH    MOV AM INX H  MOV BM MOV CA
8902H LHLD   COH    9BH    DAD B  MOV AM SUB I  41H    LHLD   B2H
890BH 9BH    MOV MA MOV LA MOV HI OOH    JMP    2DH    8BH    LHLD
8914H E6H    9BH    MOV AM INX H  MOV BM DCX H  MOV MA INX H  MOV MB
891DH JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8926H MOV CA LXI H  C8H    03H    DAD B  XCHG   LHLD   E6H    9BH
892FH MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
8938H MOV AM INX H  MOV BM MOV CA LXI H  54H    07H    DAD B  XCHG
8941H LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
894AH LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  51H
8953H ODH    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
895CH JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8965H MOV CA LXI H  AAH    11H    DAD B  XCHG   LHLD   E6H    9BH
896EH MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
8977H MOV AM INX H  MOV BM MOV CA LXI H  BDH    14H    DAD B  XCHG
8980H LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
8989H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  68H
8992H 18H    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
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899BH JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
89A4H MOV CA LXI H  70H    1AH    DAD B  XCHG   LHLD   E6H    9BH
89ADH MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
89B6H MOV AM INX H  MOV BM MOV CA LXI H  51H    1CH    DAD B  XCHG
89BFH LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
89C8H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  8BH
89D1H 1EH    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
89DAH JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
89E3H MOV CA LXI H  18H    1FH    DAD B  XCHG   LHLD   E6H    9BH
89ECH MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
89F5H MOV AM INX H  MOV BM MOV CA LXI H  97H    1FH    DAD B  XCHG
89FEH LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
8A07H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  71H
8A10H 21H    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
8A19H JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8A22H MOV CA LXI H  BFH    24H    DAD B  XCHG   LHLD   E6H    9BH
8A2BH MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
8A34H MOV AM INX H  MOV BM MOV CA LXI H  51H    26H    DAD B  XCHG
8A3DH LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
8A46H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  57H
8A4FH 28H    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
8A58H JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8A61H MOV CA LXI H  0AH    2DH    DAD B  XCHG   LHLD   E6H    9BH
8A6AH MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
8A73H MOV AM INX H  MOV BM MOV CA LXI H  A8H    2DH    DAD B  XCHG
8A7CH LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
8A85H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  B9H
8A8EH 30H    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
8A97H JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8AA0H MOV CA LXI H  54H    37H    DAD B  XCHG   LHLD   E6H    9BH
8AA9H MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
8AB2H MOV AM INX H  MOV BM MOV CA LXI H  AFH    3AH    DAD B  XCHG
8ABBH LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
8AC4H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  22H
8ACDH 3BH    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
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8AD6H JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8ADFH MOV CA LXI H  DBH    3BH    DAD B  XCHG   LHLD   E6H    9BH
8AE8H MOV ME INX H  MOV MD JMP    6BH    8BH    LHLD   E6H    9BH
8AF1H MOV AM INX H  MOV BM MOV CA LXI H  BBH    3DH    DAD B  XCHG
8AFAH LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    6BH    8BH
8B03H LHLD   E6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  EAH
8B0CH 3DH    DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD
8B15H JMP    6BH    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8B1EH MOV CA LXI H  71H    3EH    DAD B  XCHG   LHLD   E6H    9BH
8B27H MOV ME INX H  MOV MD JMP    6BH    8BH    DAD H  LXI B  37H
8B30H 8BH    DAD B  MOV EM INX H  MOV DM XCHG   PCHL
8B37H 13H 89H 20H 89H 35H 89H 4AH 89H 5FH 89H 74H 89H 89H 89H 9EH 89H
8B47H B3H 89H C8H 89H DDH 89H F2H 89H 07H 8AH 1CH 8AH 31H 8AH 46H 8AH
8B57H 5BH 8AH 70H 8AH 85H 8AH 9AH 8AH AFH 8AH C4H 8AH D9H 8AH EEH 8AH
8B67H 03H 8BH 18H 8BH
8B6BH LHLD   E0H    9BH    MOV AM INX H  MOV BM MOV CA LXI D  30H
8B74H 00H    MOV LC MOV HB DAD D  XCHG   LHLD   F6H    9BH    MOV ME
8B7DH LHLD   E6H    9BH    MOV AM INX H  MOV BM LHLD   EAH    9BH
8B86H MOV MA INX H  MOV MB DCX H  MOV AM INX H  MOV BM MOV CA LHLD
8B8FH EEH    9BH    DAD B  MOV AM SUB I  30H    JZ     B0H    8DH
8B98H LHLD   F6H    9BH    MOV AM LHLD   EAH    9BH    MOV CA MOV AM
8BA1H INX H  MOV DM MOV EA LHLD   EEH    9BH    DAD D  MOV AM SUB C
8BAAH JZ     D9H    8BH    LHLD   E6H    9BH    MOV AM INX H  MOV BM
8BB3H MOV CA LXI D  05H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
8BBCH EAH    9BH    MOV AM INX H  MOV BM MOV CA PUSH D LHLD   EEH
8BC5H 9BH    DAD B  MOV AM SUB I  30H    MOV CA MOV BI 00H    POP H
8BCEH DAD B  XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP
8BD7H 7DH    8BH    LHLD   EAH    9BH    MOV AM INX H  MOV BM MOV CA
8BE0H MOV LC MOV HB INX H  XCHG   LHLD   ECH    9BH    MOV ME INX H
8BE9H MOV MD LHLD   DEH    9BH    MOV AM INX H  MOV BM LHLD   B6H
8BF2H 9BH    MOV MA INX H  MOV MB LHLD   B6H    9BH    MOV AM INX H
8BFBH MOV BM LHLD   BAH    9BH    MOV CA MOV AM INX H  MOV DM MOV EA
8C04H MOV AC SUB E  MOV CA MOV AB SBC D  JNC    7AH    8CH    LHLD
8C0DH B6H    9BH    MOV AM INX H  MOV BM MOV CA LHLD   C0H    9BH
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8C16H DAD B   MOV AM LHLD   ECH     9BH     MOV CA MOV AM INX H  MOV DM
8C1FH MOV EA LHLD   EEH     9BH     DAD D   MOV AM SUB C  JZ     55H
8C28H 8CH     LHLD  E6H     9BH     MOV AM  INX H  MOV BM MOV CA LXI D
8C31H 05H     00H   MOV LC  MOV HB  DAD D   XCHG   LHLD   EAH    9BH
8C3AH MOV AM  INX H MOV BM  MOV CA  PUSH D  LHLD   EEH    9BH    DAD B
8C43H MOV AM  SUB I 30H     MOV CA  MOV BI  00H    POP H  DAD B  XCHG
8C4CH LHLD    E6H   9BH     MOV ME  INX H   MOV MD JMP    7DH    8BH
8C55H LHLD    ECH   9BH     MOV AM  INX H   MOV BM MOV CA MOV LC MOV HB
8C5EH INX H   XCHG  LHLD    ECH     9BH     MOV ME INX H  MOV MD LHLD
8C67H B6H     9BH   MOV AM  INX H  MOV BM  MOV CA MOV LC MOV HB INX H
8C70H XCHG    LHLD  B6H     9BH     MOV ME  INX H  MOV MD JMP    F6H
8C79H 8BH     LHLD  E4H     9BH     MOV MI  01H    JMP    34H    91H
8C82H LHLD    E0H   9BH     MOV AM  INX H   MOV BM MOV CA LXI D  30H
8C8BH 00H     MOV LC MOV HB DAD D   XCHG    LHLD   F6H    9BH    MOV ME
8C94H LHLD    E6H   9BH     MOV AM  INX H   MOV BM LHLD   E8H    9BH
8C9DH MOV CA  MOV AM INX H  MOV DM  MOV EA  XCHG   DAD B  XCHG   LHLD
8CA6H E6H     9BH   MOV ME  INX H  MOV MD  LHLD   E6H    9BH    MOV AM
8CAFH INX H   MOV BM LHLD   EAH     9BH     MOV MA INX H  MOV MB DCX H
8CB8H MOV AM  INX H MOV BM  MOV CA  LHLD    EEH    9BH    DAD B  MOV AM
8CC1H SUB I   30H   JZ      B0H     8DH     LHLD   F6H    9BH    MOV AM
8CCAH LHLD    EAH   9BH     MOV CA  MOV AM  INX H  MOV DM MOV EA LHLD
8CD3H EEH     9BH   DAD D   MOV AM  SUB C   JZ     07H    8DH    LHLD
8CDCH E6H     9BH   MOV AM  INX H  MOV BM  MOV CA LXI D  03H    00H
8CE5H MOV LC  MOV HB DAD D  XCHG    LHLD    EAH    9BH    MOV AM INX H
8CEEH MOV BM  MOV CA PUSH D LHLD    EEH     9BH    DAD B  MOV AM SUB I
8CF7H 30H     MOV CA MOV BI 00H     POP H   DAD B  XCHG   LHLD   E6H
8D00H 9BH     MOV ME INX H  MOV MD  JMP     ABH    8CH    LHLD   EAH
8D09H 9BH     MOV AM INX H  MOV BM  MOV CA  MOV LC MOV HB INX H  XCHG
8D12H LHLD    ECH   9BH     MOV ME  INX H   MOV MD LHLD   DEH    9BH
8D1BH MOV AM  INX H MOV BM  LHLD    B6H     9BH    MOV MA INX H  MOV MB
8D24H LHLD    B6H   9BH     MOV AM  INX H   MOV BM LHLD   BAH    9BH
8D2DH MOV CA  MOV AM INX H  MOV DM  MOV EA  MOV AC SUB E  MOV CA MOV AB
8D36H SBC D   JNC   A8H     8DH     LHLD    B6H    9BH    MOV AM INX H
8D3FH MOV BM  MOV CA LHLD   C0H     9BH     DAD B  MOV AM LHLD   ECH
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8D48H 9BH     MOV CA MOV AM INX H  MOV DM MOV EA LHLD   EEH     9BH
8D51H DAD D   MOV AM SUB C  JZ     83H     8DH     LHLD   E6H     9BH
8D5AH MOV AM  INX H  MOV BM MOV CA LXI D  03H     00H     MOV LC MOV HB
8D63H DAD D   XCHG   LHLD   EAH     9BH     MOV AM INX H  MOV BM MOV CA
8D6CH PUSH D  LHLD   EEH    9BH     DAD B   MOV AM SUB I  30H     MOV CA
8D75H MOV BI  00H    POP H  DAD B   XCHG    LHLD   E6H     9BH     MOV ME
8D7EH INX H   MOV MD JMP    ABH     8CH     LHLD   ECH     9BH     MOV AM
8D87H INX H   MOV BM MOV CA MOV LC MOV HB INX H  XCHG   LHLD   ECH
8D90H 9BH     MOV ME INX H  MOV MD LHLD   B6H     9BH     MOV AM INX H
8D99H MOV BM  MOV CA MOV LC MOV HB INX H  XCHG   LHLD   B6H     9BH
8DA2H MOV ME  INX H  MOV MD JMP    24H     8DH     LHLD   E4H     9BH
8DABH MOV MI  02H    JMP    34H     91H     LHLD   E0H     9BH     MOV AM
8DB4H INX H   MOV BM LHLD   F6H     9BH     MOV MA LHLD   E6H     9BH
8DBDH MOV MI  00H    INX H  MOV MI 00H     LHLD   E6H     9BH     MOV AM
8DC6H INX H   MOV BM LHLD   EAH     9BH     MOV MA INX H  MOV MB DCX H
8DCFH MOV AM  INX H  MOV BM MOV CA LHLD   BCH     9BH     DAD B  MOV AM
8DD8H SUB I   30H    JNZ    E5H     8DH     LHLD   D2H     9BH     MOV MI
8DE1H FFH     JMP    F9H    8EH     LHLD   F6H     9BH     MOV AM LHLD
8DEAH EAH     9BH    MOV CA MOV AM INX H  MOV DM MOV EA LHLD   BCH
8DF3H 9BH     DAD D  MOV AM SUB C  JZ     3BH     8EH     LHLD   E6H
8DFCH 9BH     MOV AM INX H  MOV BM LHLD   EAH     9BH     MOV CA MOV AM
8E05H INX H   MOV DM MOV EA LHLD   BCH     9BH     DAD D  MOV AM MOV EA
8E0EH MOV DI  00H    MOV LC MOV HB DAD D  INX H  XCHG   LHLD   E6H
8E17H 9BH     MOV ME INX H  MOV MD DCX H  MOV AM INX H  MOV BM DCX H
8E20H MOV CA  MOV AM INX H  MOV DM MOV EA LHLD   BCH     9BH     DAD D
8E29H MOV AM  MOV EA MOV DI 00H     MOV LC MOV HB DAD D  INX H  XCHG
8E32H LHLD    E6H    9BH    MOV ME INX H  MOV MD JMP    C2H     8DH
8E3BH LHLD    EAH    9BH    MOV AM INX H  MOV BM MOV CA MOV LC MOV HB
8E44H INX H   XCHG   LHLD   ECH     9BH     MOV ME INX H  MOV MD LHLD
8E4DH DEH     9BH    MOV AM INX H  MOV BM LHLD   B6H     9BH     MOV MA
8E56H INX H   MOV MB LHLD   B6H     9BH     MOV AM INX H  MOV BM LHLD
8E5FH BAH     9BH    MOV CA MOV AM INX H  MOV DM MOV EA MOV AC SUB E
8E68H MOV CA  MOV AB SBC D  JNC    F1H     8EH     LHLD   B6H     9BH
8E71H MOV AM  INX H  MOV BM MOV CA LHLD   C0H     9BH     DAD B  MOV AM
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8E7AH LHLD   ECH    9BH    MOV CA MOV AM INX H  MOV DM MOV EA LHLD
8E83H BCH    9BH    DAD D  MOV AM SUB C  JZ    CCH    8EH    LHLD
8E8CH E6H    9BH    MOV AM INX H  MOV BM LHLD  EAH    9BH    MOV CA
8E95H MOV AM INX H  MOV DM MOV EA LHLD  BCH    9BH    DAD D  MOV AM
8E9EH MOV EA MOV DI 00H    MOV LC MOV HB DAD D  INX H  XCHG   LHLD
8EA7H E6H    9BH    MOV ME INX H  MOV MD DCX H  MOV AM INX H  MOV BM
8EB0H DCX H  MOV CA MOV AM INX H  MOV DM MOV EA LHLD  BCH    9BH
8EB9H DAD D  MOV AM MOV EA MOV DI 00H    MOV LC MOV HB DAD D  INX H
8EC2H XCHG   LHLD   E6H    9BH    MOV ME INX H  MOV MD JMP    C2H
8ECBH 8DH    LHLD   ECH    9BH    MOV AM INX H  MOV BM MOV CA MOV LC
8ED4H MOV HB INX H  XCHG   LHLD   ECH    9BH    MOV ME INX H  MOV MD
8EDDH LHLD   B6H    9BH    MOV AM INX H  MOV BM MOV CA MOV LC MOV HB
8EE6H INX H  XCHG   LHLD   B6H    9BH    MOV ME INX H  MOV MD JMP
8EEFH 58H    8EH    LHLD   E4H    9BH    MOV MI 03H    JMP    34H
8EF8H 91H    LHLD   F4H    9BH    MOV MI 01H    LHLD   DEH    9BH
8F01H MOV AM INX H  MOV BM LHLD   B6H    9BH    MOV MA INX H  MOV MB
8F0AH LHLD   B6H    9BH    MOV AM INX H  MOV BM LHLD   BAH    9BH
8F13H MOV CA MOV AM INX H  MOV DM MOV EA MOV AC SUB E  MOV CA MOV AB
8F1CH SBC D  JNC    31H    91H    LHLD   B6H    9BH    MOV AM INX H
8F25H MOV BM MOV CA LHLD   C0H    9BH    DAD B  MOV AM SUB I  41H
8F2EH JC     53H    90H    LHLD   B6H    9BH    MOV AM INX H  MOV BM
8F37H MOV CA LHLD   C0H    9BH    DAD B  MOV AM SUB I  41H    MOV LA
8F40H MOV HI 00H    JMP    15H    90H    LHLD   F8H    9BH    MOV MI
8F49H 00H    JMP    D5H    90H    LHLD   F8H    9BH    MOV MI 04H
8F52H JMP    D5H    90H    LHLD   F8H    9BH    MOV MI 08H    JMP
8F5BH D5H    90H    LHLD   F8H    9BH    MOV MI 0CH    JMP    D5H
8F64H 90H    LHLD   F8H    9BH    MOV MI 10H    JMP    D5H    90H
8F6DH LHLD   F8H    9BH    MOV MI 14H    JMP    D5H    90H    LHLD
8F76H F8H    9BH    MOV MI 18H    JMP    D5H    90H    LHLD   F8H
8F7FH 9BH    MOV MI 1CH    JMP    D5H    90H    LHLD   F8H    9BH
8F88H MOV MI 20H    JMP    D5H    90H    LHLD   F8H    9BH    MOV MI
8F91H 24H    JMP    D5H    90H    LHLD   F8H    9BH    MOV MI 28H
8F9AH JMP    D5H    90H    LHLD   F8H    9BH    MOV MI 2CH    JMP
8FA3H D5H    90H    LHLD   F8H    9BH    MOV MI 30H    JMP    D5H
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8FACH 90H     LHLD    F8H     9BH     MOV MI 34H     JMP     D5H     90H
8FB5H LHLD    F8H     9BH     MOV MI 38H     JMP     D5H     90H     LHLD
8FBEH F8H     9BH     MOV MI 3CH     JMP     D5H     90H     LHLD    F8H
8FC7H 9BH     MOV MI 40H     JMP     D5H     90H     LHLD    F8H     9BH
8FD0H MOV MI 44H     JMP     D5H     90H     LHLD    F8H     9BH     MOV MI
8FD9H 48H     JMP     D5H     90H     LHLD    F8H     9BH     MOV MI 4CH
8FE2H JMP     D5H     90H     LHLD    F8H     9BH     MOV MI 50H     JMP
8FEBH D5H     90H     LHLD    F8H     9BH     MOV MI 54H     JMP     D5H
8FF4H 90H     LHLD    F8H     9BH     MOV MI 58H     JMP     D5H     90H
8FFDH LHLD    F8H     9BH     MOV MI 5CH     JMP     D5H     90H     LHLD
9006H F8H     9BH     MOV MI 60H     JMP     D5H     90H     LHLD    F8H
900FH 9BH     MOV MI 64H     JMP     D5H     90H     DAD H  LXI B  1FH
9018H 90H     DAD B  MOV EM INX H  MOV DM XCHG    PCHL
901FH 45H 8FH 4DH 8FH 55H 8FH 5DH 8FH 65H 8FH 6DH 8FH 75H 8FH 7DH 8FH
902FH 85H 8FH 8DH 8FH 95H 8FH 9DH 8FH A5H 8FH ADH 8FH B5H 8FH BDH 8FH
903FH C5H 8FH CDH 8FH D5H 8FH DDH 8FH E5H 8FH EDH 8FH F5H 8FH FDH 8FH
904FH 05H 90H 0DH 90H
9053H LHLD    B6H     9BH     MOV AM INX H  MOV BM MOV CA LHLD    C0H
905CH 9BH     DAD B  MOV AM SUB I  30H     MOV LA MOV HI 00H     JMP
9065H B7H     90H     LHLD    F8H     9BH     MOV MI 68H     JMP     D5H
906EH 90H     LHLD    F8H     9BH     MOV MI 6CH     JMP     D5H     90H
9077H LHLD    F8H     9BH     MOV MI 70H     JMP     D5H     90H     LHLD
9080H F8H     9BH     MOV MI 74H     JMP     D5H     90H     LHLD    F8H
9089H 9BH     MOV MI 78H     JMP     D5H     90H     LHLD    F8H     9BH
9092H MOV MI 7CH     JMP     D5H     90H     LHLD    F8H     9BH     MOV MI
909BH 80H     JMP     D5H     90H     LHLD    F8H     9BH     MOV MI 84H
90A4H JMP     D5H     90H     LHLD    F8H     9BH     MOV MI 88H     JMP
90ADH D5H     90H     LHLD    F8H     9BH     MOV MI 8CH     JMP     D5H
90B6H 90H     DAD H  LXI B  C1H     90H     DAD B  MOV EM INX H  MOV DM
90BFH XCHG    PCHL
90C1H 67H 90H 6FH 90H 77H 90H 7FH 90H 87H 90H 8FH 90H 97H 90H 9FH 90H
90D1H A7H 90H AFH 90H
90D5H LHLD    F4H     9BH     MOV AM LHLD    F2H     9BH     MOV MA LHLD
90DEH F2H     9BH     MOV AM LHLD    F4H     9BH     MOV CA MOV AM ADD I
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90E7H 04H     SUB C   JC      16H     91H     LHLD    F2H     9BH     MOV AM
90F0H MOV CA  MOV BI  00H     LHLD    F0H     9BH     DAD B   XCHG    LHLD
90F9H F8H     9BH     MOV AM  MOV CA  PUSH D  MOV BI  00H     LHLD    FAH
9102H 9BH     DAD B   MOV AM  POP H   MOV MA  LHLD    F8H     9BH     MOV AM
910BH INR A   MOV MA  LHLD    F2H     9BH     MOV AM  INR A   MOV MA  JNZ
9114H DDH     90H     LHLD    F4H     9BH     MOV AM  ADD I   04H     MOV MA
911DH LHLD    B6H     9BH     MOV AM  INX H   MOV BM  MOV CA  MOV LC  MOV HB
9126H INX H   XCHG    LHLD    B6H     9BH     MOV ME  INX H   MOV MD  JMP
912FH 0AH     8FH     JMP     34H     91H     LHLD    AAH     9BH     MOV AM
9138H SUB I   54H     JZ      43H     91H     JMP     46H     91H     JMP
9141H 46H     91H     JMP     2BH     93H     LHLD    ACH     9BH     MOV AM
914AH SUB I   56H     SUB I   01H     SBC A   LHLD    E4H     9BH     MOV CA
9153H MOV AM  SUB I   00H     SUB I   01H     SBC A   ANA C   RRC     JNC
915CH 31H     92H     LHLD    B6H     9BH     MOV MI  01H     INX H   MOV MI
9165H 00H     LHLD    B6H     9BH     MOV AM  INX H   MOV BM  LHLD    E0H
916EH 9BH     MOV CA  MOV AM  INX H   MOV DM  SUB C   MOV EA  MOV AD  SBC B
9177H JC      C0H     91H     LHLD    C4H     9BH     MOV AM  INX H   MOV BM
9180H LHLD    B6H     9BH     MOV CA  MOV AM  INX H   MOV DM  MOV EA  XCHG
9189H DAD B   XCHG    LHLD    C2H     9BH     DAD D   XCHG    LHLD    DEH
9192H 9BH     MOV AM  INX H   MOV BM  PUSH D  LHLD    B6H     9BH     MOV CA
919BH MOV AM  INX H   MOV DM  MOV EA  XCHG    DAD B   DCX H   XCHG    LHLD
91A4H C0H     9BH     DAD D   MOV AM  POP H   MOV MA  LHLD    B6H     9BH
91ADH MOV AM  INX H   MOV BM  MOV CA  LXI H   01H     00H     DAD B   XCHG
91B6H LHLD    B6H     9BH     MOV ME  INX H   MOV MI  00H     JMP     66H
91BFH 91H     LHLD    C4H     9BH     MOV AM  INX H   MOV BM  LHLD    E0H
91C8H 9BH     MOV CA  MOV AM  INX H   MOV DM  MOV EA  XCHG    DAD B   INX H
91D1H XCHG    LHLD    C2H     9BH     DAD D   MOV MI  20H     LHLD    C4H
91DAH 9BH     MOV AM  INX H   MOV BM  LHLD    E0H     9BH     MOV CA  MOV AM
91E3H INX H   MOV DM  MOV EA  XCHG    DAD B   INX H   XCHG    LHLD    C4H
91ECH 9BH     MOV ME  INX H   MOV MD  LHLD    C8H     9BH     MOV AM  INR A
91F5H MOV CA  MOV BI  00H     LHLD    C6H     9BH     DAD B   DAD B   XCHG
91FEH LHLD    C8H     9BH     MOV AM  INR A   MOV CA  PUSH D  MOV BI  00H
9207H LHLD    C6H     9BH     DAD B   DAD B   MOV AM  INX H   MOV BM  LHLD
9210H E0H     9BH     MOV CA  MOV AM  INX H   MOV DM  MOV EA  XCHG    DAD B
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9219H INX H  XCHG   POP H  MOV ME INX H  MOV MD LHLD   D4H    9BH
9222H MOV AM SUB I  FFH    JNZ    19H    93H    LHLD   C8H    9BH
922BH MOV AM INR A  MOV MA JMP    19H    93H    LHLD   ACH    9BH
9234H MOV AM SUB I  57H    SUB I  01H    SBC A  LHLD   E4H    9BH
923DH MOV CA MOV AM SUB I  00H    SUB I  01H    SBC A  ANA C  RRC
9246H JNC    19H    93H    LHLD   B6H    9BH    MOV MI 01H    INX H
924FH MOV MI 00H    LHLD   B6H    9BH    MOV AM INX H  MOV BM LHLD
9258H E0H    9BH    MOV CA MOV AM INX H  MOV DM SUB C  MOV EA MOV AD
9261H SBC B  JC     ABH    92H    LHLD   CCH    9BH    MOV AM INX H
926AH MOV BM LHLD   B6H    9BH    MOV CA MOV AM INX H  MOV DM MOV EA
9273H XCHG   DAD B  XCHG   LHLD   CAH    9BH    DAD D  XCHG   LHLD
927CH DEH    9BH    MOV AM INX H  MOV BM PUSH D LHLD   B6H    9BH
9285H MOV CA MOV AM INX H  MOV DM MOV EA XCHG   DAD B  DCX H  XCHG
928EH LHLD   C0H    9BH    DAD D  MOV AM POP H  MOV MA LHLD   B6H
9297H 9BH    MOV AM INX H  MOV BM MOV CA LXI H  01H    00H    DAD B
92A0H XCHG   LHLD   B6H    9BH    MOV ME INX H  MOV MI 00H    JMP
92A9H 51H    92H    LHLD   CCH    9BH    MOV AM INX H  MOV BM LHLD
92B2H E0H    9BH    MOV CA MOV AM INX H  MOV DM MOV EA XCHG   DAD B
92BBH INX H  XCHG   LHLD   CAH    9BH    DAD D  MOV MI 20H    LHLD
92C4H CCH    9BH    MOV AM INX H  MOV BM LHLD   E0H    9BH    MOV CA
92CDH MOV AM INX H  MOV DM MOV EA XCHG   DAD B  INX H  XCHG   LHLD
92D6H CCH    9BH    MOV ME INX H  MOV MD LHLD   D0H    9BH    MOV AM
92DFH INR A  MOV CA MOV BI 00H    LHLD   CEH    9BH    DAD B  DAD B
92E8H XCHG   LHLD   D0H    9BH    MOV AM INR A  MOV CA PUSH D MOV BI
92F1H 00H    LHLD   CEH    9BH    DAD B  DAD B  MOV AM INX H  MOV BM
92FAH LHLD   E0H    9BH    MOV CA MOV AM INX H  MOV DM MOV EA XCHG
9303H DAD B  INX H  XCHG   POP H  MOV ME INX H  MOV MD LHLD   D4H
930CH 9BH    MOV AM SUB I  FFH    JNZ    19H    93H    LHLD   D0H
9315H 9BH    MOV AM INR A  MOV MA LHLD   D4H    9BH    MOV AM SUB I
931EH 00H    JNZ    28H    93H    JMP    30H    85H    JMP    2BH
9327H 93H    JMP    58H    0EH    LHLD   DCH    9BH    MOV AM SUB I
9330H FFH    JZ     B0H    9AH    LHLD   B8H    9BH    MOV AM INX H
9339H MOV BM SUB I  07H    MOV CA MOV AB SBC I  00H    ORA C  JNZ
9342H D0H    93H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA
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934BH MOV LC MOV HB INX H  XCHG   LHLD   CAH    9BH    DAD D  MOV MI
9354H 1BH    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D
935DH 02H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH
9366H DAD D  MOV MI 1BH    LHLD   CCH    9BH    MOV AM INX H  MOV BM
936FH MOV CA LXI D  03H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
9378H CAH    9BH    DAD D  MOV MI 54H    LHLD   CCH    9BH    MOV AM
9381H INX H  MOV BM MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D
938AH XCHG   LHLD   CAH    9BH    DAD D  MOV MI 4BH    LHLD   CCH
9393H 9BH    MOV AM INX H  MOV BM MOV CA LXI D  04H    00H    MOV LC
939CH MOV HB DAD D  XCHG   LHLD   CCH    9BH    MOV ME INX H  MOV MD
93A5H LHLD   D0H    9BH    MOV AM INR A  MOV CA MOV BI 00H    LHLD
93AEH CEH    9BH    DAD B  DAD B  XCHG   LHLD   D0H    9BH    MOV AM
93B7H INR A  MOV CA PUSH D MOV BI 00H    LHLD   CEH    9BH    DAD B
93C0H DAD B  MOV AM INX H  MOV BM MOV CA LXI D  04H    00H    MOV LC
93C9H MOV HB DAD D  XCHG   POP H  MOV ME INX H  MOV MD LHLD   D2H
93D2H 9BH    MOV AM SUB I  FFH    JNZ    15H    96H    LHLD   CCH
93DBH 9BH    MOV AM INX H  MOV BM MOV CA MOV LC MOV HB INX H  XCHG
93E4H LHLD   CAH    9BH    DAD D  MOV MI 41H    LHLD   CCH    9BH
93EDH MOV AM INX H  MOV BM MOV CA LXI D  02H    00H    MOV LC MOV HB
93F6H DAD D  XCHG   LHLD   CAH    9BH    DAD D  MOV MI 45H    LHLD
93FFH CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D  03H    00H
9408H MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH    DAD D  MOV MI
9411H 41H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D
941AH 04H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH
9423H DAD D  MOV MI 45H    LHLD   CCH    9BH    MOV AM INX H  MOV BM
942CH MOV CA LXI D  05H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
9435H CAH    9BH    DAD D  MOV MI 41H    LHLD   CCH    9BH    MOV AM
943EH INX H  MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB DAD D
9447H XCHG   LHLD   CAH    9BH    DAD D  MOV MI 32H    LHLD   CCH
9450H 9BH    MOV AM INX H  MOV BM MOV CA LXI D  06H    00H    MOV LC
9459H MOV HB DAD D  XCHG   LHLD   CCH    9BH    MOV ME INX H  MOV MD
9462H LHLD   D0H    9BH    MOV AM INR A  MOV CA MOV BI 00H    LHLD
946BH CEH    9BH    DAD B  DAD B  XCHG   LHLD   D0H    9BH    MOV AM
9474H INR A  MOV CA PUSH D MOV BI 00H    LHLD   CEH    9BH    DAD B
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947DH DAD B  MOV AM INX H  MOV BM MOV CA LXI D  06H    00H    MOV LC
9486H MOV HB DAD D  XCHG   POP H  MOV ME INX H  MOV MD LHLD   FCH
948FH 9BH    MOV MI 01H    LHLD   FCH    9BH    MOV AM LHLD   F4H
9498H 9BH    MOV CA MOV AM SUB I  04H    SUB C  JC     5EH    95H
94A1H JMP    AEH    94H    LHLD   FCH    9BH    MOV AM ADD I  04H
94AAH MOV MA JMP    92H    94H    LHLD   F2H    9BH    MOV MI 01H
94B3H LHLD   F2H    9BH    MOV AM MOV CA MOV AI 04H    SUB C  JC
94BCH F4H    94H    LHLD   CCH    9BH    MOV AM INX H  MOV BM LHLD
94C5H F2H    9BH    MOV CA MOV AM MOV EA MOV DI 00H    MOV LC MOV HB
94CEH DAD D  XCHG   LHLD   CAH    9BH    DAD D  XCHG   LHLD   FCH
94D7H 9BH    MOV AM PUSH D LHLD   F2H    9BH    MOV CA MOV AM ADD C
94E0H DCR A  MOV EA MOV DI 00H    LHLD   F0H    9BH    DAD D  MOV AM
94E9H POP H  MOV MA LHLD   F2H    9BH    MOV AM INR A  MOV MA JNZ
94F2H B3H    94H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA
94FBH LXI D  05H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH
9504H 9BH    DAD D  MOV MI 41H    LHLD   CCH    9BH    MOV AM INX H
950DH MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB DAD D  XCHG
9516H LHLD   CAH    9BH    DAD D  MOV MI 32H    LHLD   CCH    9BH
951FH MOV AM INX H  MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB
9528H DAD D  XCHG   LHLD   CCH    9BH    MOV ME INX H  MOV MD LHLD
9531H D0H    9BH    MOV AM INR A  MOV CA MOV BI 00H    LHLD   CEH
953AH 9BH    DAD B  DAD B  XCHG   LHLD   D0H    9BH    MOV AM INR A
9543H MOV CA PUSH D MOV BI 00H    LHLD   CEH    9BH    DAD B  DAD B
954CH MOV AM INX H  MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB
9555H DAD D  XCHG   POP H  MOV ME INX H  MOV MD JMP    A4H    94H
955EH LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA MOV LC MOV HB
9567H INX H  XCHG   LHLD   CAH    9BH    DAD D  MOV MI 41H    LHLD
9570H CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D  02H    00H
9579H MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH    DAD D  MOV MI
9582H 32H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D
958BH 03H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH
9594H DAD D  MOV MI 41H    LHLD   CCH    9BH    MOV AM INX H  MOV BM
959DH MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
95A6H CAH    9BH    DAD D  MOV MI 46H    LHLD   CCH    9BH    MOV AM
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95AFH INX H   MOV BM MOV CA LXI D  05H     00H     MOV LC MOV HB DAD D
95B8H XCHG    LHLD   CAH     9BH     DAD D  MOV MI 41H     LHLD   CCH
95C1H 9BH     MOV AM INX H  MOV BM MOV CA LXI D  06H     00H     MOV LC
95CAH MOV HB  DAD D  XCHG   LHLD   CAH     9BH     DAD D  MOV MI 32H
95D3H LHLD    CCH    9BH     MOV AM INX H  MOV BM MOV CA LXI D  06H
95DCH 00H     MOV LC MOV HB DAD D  XCHG   LHLD   CCH     9BH     MOV ME
95E5H INX H   MOV MD LHLD   D0H    9BH     MOV AM INR A  MOV CA MOV BI
95EEH 00H     LHLD   CEH     9BH     DAD B  DAD B  XCHG   LHLD   D0H
95F7H 9BH     MOV AM INR A  MOV CA PUSH D MOV BI 00H     LHLD   CEH
9600H 9BH     DAD B  DAD B  MOV AM INX H  MOV BM MOV CA LXI D  06H
9609H 00H     MOV LC MOV HB DAD D  XCHG   POP H  MOV ME INX H  MOV MD
9612H JMP     B0H    9AH     LHLD   D8H    9BH     MOV AM SUB I  FFH
961BH JNZ     4DH    97H     LHLD   B6H    9BH     MOV MI 01H     INX H
9624H MOV MI  00H    LHLD    B6H    9BH    MOV AM INX H  MOV BM LHLD
962DH E0H     9BH    MOV CA  MOV AM INX H  MOV DM SUB C  MOV EA MOV AD
9636H SBC B   JC     80H     96H    LHLD   CCH     9BH     MOV AM INX H
963FH MOV BM  LHLD   B6H     9BH    MOV CA MOV AM INX H  MOV DM MOV EA
9648H XCHG    DAD B  XCHG    LHLD   CAH     9BH     DAD D  XCHG   LHLD
9651H DEH     9BH    MOV AM  INX H  MOV BM PUSH D LHLD   B6H     9BH
965AH MOV CA  MOV AM INX H   MOV DM MOV EA XCHG   DAD B  DCX H  XCHG
9663H LHLD    C0H    9BH     DAD D  MOV AM POP H  MOV MA LHLD   B6H
966CH 9BH     MOV AM INX H   MOV BM MOV CA LXI H  01H     00H     DAD B
9675H XCHG    LHLD   B6H     9BH    MOV ME INX H  MOV MI 00H     JMP
967EH 26H     96H    LHLD    CCH    9BH     MOV AM INX H  MOV BM LHLD
9687H E0H     9BH    MOV CA  MOV AM INX H  MOV DM MOV EA XCHG   DAD B
9690H XCHG    LHLD   CCH     9BH    MOV ME INX H  MOV MD DCX H  MOV AM
9699H INX H   MOV BM MOV CA  MOV LC MOV HB INX H  XCHG   LHLD   CAH
96A2H 9BH     DAD D  MOV MI  46H    LHLD   CCH     9BH     MOV AM INX H
96ABH MOV BM  MOV CA LXI D   02H    00H    MOV LC MOV HB DAD D  XCHG
96B4H LHLD    CAH    9BH     DAD D  MOV MI 46H    LHLD   CCH     9BH
96BDH MOV AM  INX H  MOV BM  MOV CA LXI D  03H     00H     MOV LC MOV HB
96C6H DAD D   XCHG   LHLD    CAH    9BH     DAD D  MOV MI 41H     LHLD
96CFH DAH     9BH    MOV AM  SUB I  00H     JNZ     EEH     96H     LHLD
96D8H CCH     9BH    MOV AM  INX H  MOV BM MOV CA LXI D  04H     00H
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96E1H MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH    DAD D  MOV MI
96EAH 30H    JMP    02H    97H    LHLD   CCH    9BH    MOV AM INX H
96F3H MOV BM MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D  XCHG
96FCH LHLD   CAH    9BH    DAD D  MOV MI 32H    LHLD   CCH    9BH
9705H MOV AM INX H  MOV BM MOV CA LXI D  04H    00H    MOV LC MOV HB
970EH DAD D  XCHG   LHLD   CCH    9BH    MOV ME INX H  MOV MD LHLD
9717H D0H    9BH    MOV AM INR A  MOV CA MOV BI 00H    LHLD   CEH
9720H 9BH    DAD B  DAD B  XCHG   LHLD   D0H    9BH    MOV AM INR A
9729H MOV CA PUSH D MOV BI 00H    LHLD   CEH    9BH    DAD B  DAD B
9732H MOV AM INX H  MOV BM LHLD   E0H    9BH    MOV CA MOV AM INX H
973BH MOV DM MOV EA XCHG   DAD B  XCHG   LXI B  04H    00H    XCHG
9744H DAD B  XCHG   POP H  MOV ME INX H  MOV MD JMP    B0H    9AH
974DH LHLD   E4H    9BH    MOV AM DCR A  JNZ    3EH    98H    LHLD
9756H B6H    9BH    MOV MI 01H    INX H  MOV MI 00H    LHLD   B6H
975FH 9BH    MOV AM INX H  MOV BM MOV CA MOV AI 04H    SUB C  MOV EA
9768H MOV AI 00H    SBC B  JC     B4H    97H    LHLD   CCH    9BH
9771H MOV AM INX H  MOV BM LHLD   B6H    9BH    MOV CA MOV AM INX H
977AH MOV DM MOV EA XCHG   DAD B  XCHG   LHLD   CAH    9BH    DAD D
9783H XCHG   LHLD   ECH    9BH    MOV AM INX H  MOV BM PUSH D LHLD
978CH B6H    9BH    MOV CA MOV AM INX H  MOV DM MOV EA XCHG   DAD B
9795H DCX H  XCHG   LHLD   EEH    9BH    DAD D  MOV AM POP H  MOV MA
979EH LHLD   B6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  01H
97A7H 00H    DAD B  XCHG   LHLD   B6H    9BH    MOV ME INX H  MOV MI
97B0H 00H    JMP    5DH    97H    LHLD   CCH    9BH    MOV AM INX H
97B9H MOV BM MOV CA LXI D  05H    00H    MOV LC MOV HB DAD D  XCHG
97C2H LHLD   CAH    9BH    DAD D  MOV MI 41H    LHLD   DAH    9BH
97CBH MOV AM SUB I  00H    JNZ    E8H    97H    LHLD   CCH    9BH
97D4H MOV AM INX H  MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB
97DDH DAD D  XCHG   LHLD   CAH    9BH    DAD D  MOV MI 30H    JMP
97E6H FCH    97H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA
97EFH LXI D  06H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH
97F8H 9BH    DAD D  MOV MI 32H    LHLD   CCH    9BH    MOV AM INX H
9801H MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB DAD D  XCHG
980AH LHLD   CCH    9BH    MOV ME INX H  MOV MD LHLD   D0H    9BH
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9813H MOV AM INR A  MOV CA MOV BI 00H    LHLD   CEH    9BH    DAD B
981CH DAD B  XCHG   LHLD   D0H    9BH    MOV AM INR A  MOV CA PUSH D
9825H MOV BI 00H    LHLD   CEH    9BH    DAD B  DAD B  MOV AM INX H
982EH MOV BM MOV CA LXI D  06H    00H    MOV LC MOV HB DAD D  XCHG
9837H POP H  MOV ME INX H  MOV MD JMP    B0H    9AH    LHLD   E4H
9840H 9BH    MOV AM SUB I  02H    JNZ    30H    99H    LHLD   B6H
9849H 9BH    MOV MI 01H    INX H  MOV MI 00H    LHLD   B6H    9BH
9852H MOV AM INX H  MOV BM MOV CA MOV AI 02H    SUB C  MOV EA MOV AI
985BH 00H    SBC B  JC     A6H    98H    LHLD   CCH    9BH    MOV AM
9864H INX H  MOV BM LHLD   B6H    9BH    MOV CA MOV AM INX H  MOV DM
986DH MOV EA XCHG   DAD B  XCHG   LHLD   CAH    9BH    DAD D  XCHG
9876H LHLD   ECH    9BH    MOV AM INX H  MOV BM PUSH D LHLD   B6H
987FH 9BH    MOV CA MOV AM INX H  MOV DM MOV EA XCHG   DAD B  DCX H
9888H XCHG   LHLD   EEH    9BH    DAD D  MOV AM POP H  MOV MA LHLD
9891H B6H    9BH    MOV AM INX H  MOV BM MOV CA LXI H  01H    00H
989AH DAD B  XCHG   LHLD   B6H    9BH    MOV ME INX H  MOV MI 00H
98A3H JMP    4FH    98H    LHLD   CCH    9BH    MOV AM INX H  MOV BM
98ACH MOV CA LXI D  03H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
98B5H CAH    9BH    DAD D  MOV MI 41H    LHLD   DAH    9BH    MOV AM
98BEH SUB I  00H    JNZ    DAH    98H    LHLD   CCH    9BH    MOV AM
98C7H INX H  MOV BM MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D
98D0H XCHG   LHLD   CAH    9BH    DAD D  MOV MI 30H    JMP    EEH
98D9H 98H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D
98E2H 04H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH
98EBH DAD D  MOV MI 32H    LHLD   CCH    9BH    MOV AM INX H  MOV BM
98F4H MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
98FDH CCH    9BH    MOV ME INX H  MOV MD LHLD   D0H    9BH    MOV AM
9906H INR A  MOV CA MOV BI 00H    LHLD   CEH    9BH    DAD B  DAD B
990FH XCHG   LHLD   D0H    9BH    MOV AM INR A  MOV CA PUSH D MOV BI
9918H 00H    LHLD   CEH    9BH    DAD B  DAD B  MOV AM INX H  MOV BM
9921H MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D  XCHG   POP H
992AH MOV ME INX H  MOV MD JMP    B0H    9AH    LHLD   E4H    9BH
9933H MOV AM SUB I  03H    JNZ    B0H    9AH    LHLD   ECH    9BH
993CH MOV AM INX H  MOV BM MOV CA LHLD   BCH    9BH    DAD B  MOV AM
```

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9945H LHLD   FEH    9BH    MOV MA INX H  MOV MI 00H    LHLD   CCH
994EH 9BH    MOV AM INX H  MOV BM MOV CA MOV LC MOV HB INX H  XCHG
9957H LHLD   CAH    9BH    DAD D  MOV MI 39H    LHLD   CCH    9BH
9960H MOV AM INX H  MOV BM MOV CA LXI D  02H    00H    MOV LC MOV HB
9969H DAD D  XCHG   LHLD   CAH    9BH    DAD D  MOV MI 41H    LHLD
9972H CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D  02H    00H
997BH MOV LC MOV HB DAD D  XCHG   LHLD   CCH    9BH    MOV ME INX H
9984H MOV MD LHLD   B6H    9BH    MOV MI 01H    INX H  MOV MI 00H
998DH LHLD   B6H    9BH    MOV AM INX H  MOV BM LHLD   FEH    9BH
9996H MOV CA MOV AM INX H  MOV DM SUB C  MOV EA MOV AD SBC B  JC
999FH E6H    99H    LHLD   CCH    9BH    MOV AM INX H  MOV BM LHLD
99A8H B6H    9BH    MOV CA MOV AM INX H  MOV DM MOV EA XCHG   DAD B
99B1H XCHG   LHLD   CAH    9BH    DAD D  XCHG   LHLD   ECH    9BH
99BAH MOV AM INX H  MOV BM PUSH D LHLD   B6H    9BH    MOV CA MOV AM
99C3H INX H  MOV DM MOV EA XCHG   DAD B  XCHG   LHLD   BCH    9BH
99CCH DAD D  MOV AM POP H  MOV MA LHLD   B6H    9BH    MOV AM INX H
99D5H MOV BM MOV CA LXI H  01H    00H    DAD B  XCHG   LHLD   B6H
99DEH 9BH    MOV ME INX H  MOV MI 00H    JMP    8DH    99H    LHLD
99E7H CCH    9BH    MOV AM INX H  MOV BM LHLD   FEH    9BH    MOV CA
99F0H MOV AM INX H  MOV DM MOV EA XCHG   DAD B  XCHG   LHLD   CCH
99F9H 9BH    MOV ME INX H  MOV MD DCX H  MOV AM INX H  MOV BM MOV CA
9A02H MOV LC MOV HB INX H  XCHG   LHLD   CAH    9BH    DAD D  MOV MI
9A0BH 46H    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D
9A14H 02H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH
9A1DH DAD D  MOV MI 46H    LHLD   CCH    9BH    MOV AM INX H  MOV BM
9A26H MOV CA LXI D  03H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
9A2FH CAH    9BH    DAD D  MOV MI 41H    LHLD   DAH    9BH    MOV AM
9A38H SUB I  00H    JNZ    54H    9AH    LHLD   CCH    9BH    MOV AM
9A41H INX H  MOV BM MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D
9A4AH XCHG   LHLD   CAH    9BH    DAD D  MOV MI 30H    JMP    68H
9A53H 9AH    LHLD   CCH    9BH    MOV AM INX H  MOV BM MOV CA LXI D
9A5CH 04H    00H    MOV LC MOV HB DAD D  XCHG   LHLD   CAH    9BH
9A65H DAD D  MOV MI 32H    LHLD   CCH    9BH    MOV AM INX H  MOV BM
9A6EH MOV CA LXI D  04H    00H    MOV LC MOV HB DAD D  XCHG   LHLD
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9A77H CCH     9BH     MOV ME INX H  MOV MD LHLD   D0H     9BH     MOV AM
9A80H INR A   MOV CA  MOV BI 00H    LHLD   CEH     9BH     DAD B   DAD B
9A89H XCHG    LHLD    D0H     9BH   MOV AM INR A  MOV CA  PUSH D  MOV BI
9A92H 00H     LHLD    CEH     9BH   DAD B  DAD B  MOV AM  INX H   MOV BM
9A9BH LHLD    FEH     9BH     MOV CA MOV AM INX H  MOV DM  MOV EA  XCHG
9AA4H DAD B   XCHG    LXI B   06H    00H    XCHG   DAD B   XCHG    POP H
9AADH MOV ME  INX H   MOV MD  LHLD   D4H    9BH    MOV AM  SUB I   FFH
9AB6H JNZ     2FH     9BH     LHLD   CCH    9BH    MOV AM  INX H   MOV BM
9ABFH MOV CA  MOV LC  MOV HB  INX H  XCHG   LHLD   CAH     9BH     DAD D
9AC8H MOV MI  0DH     LHLD    CCH    9BH    MOV AM INX H   MOV BM  MOV CA
9AD1H LXI D   02H     00H     MOV LC MOV HB DAD D  XCHG    LHLD    CAH
9ADAH 9BH     DAD D   MOV MI  0AH    LHLD   CCH    9BH     MOV AM  INX H
9AE3H MOV BM  MOV CA  LXI D   02H    00H    MOV LC MOV HB  DAD D   XCHG
9AECH LHLD    CCH     9BH     MOV ME INX H  MOV MD LHLD    D0H     9BH
9AF5H MOV AM  INR A   MOV MA  MOV CA MOV BI 00H    LHLD    CEH     9BH
9AFEH DAD B   DAD B   XCHG    LHLD   D0H    9BH    MOV AM  MOV CA  PUSH D
9B07H MOV BI  00H     LHLD    CEH    9BH    DAD B  DAD B  MOV AM  INX H
9B10H MOV BM  MOV CA  LXI D   02H    00H    MOV LC MOV HB  DAD D   XCHG
9B19H POP H   MOV ME  INX H   MOV MD LHLD   BEH    9BH     MOV MI  00H
9B22H INX H   MOV MI  00H     MOV AI 10H    OUT    E9H     JMP     BBH
9B2BH 13H     JMP     32H     9BH    JMP    30H    85H     EI      HLT
```

APPENDIX E

VOICE PROGRAM SOURCE-TO-ASSEMBLY CODE CROSS-REFERENCE MAP

```
  1=8003H   13=800BH   14=8011H   15=8017H   16=801DH   17=8023H
 18=8029H   19=802FH   20=8035H   26=803AH   28=8042H   29=8048H
 30=804EH   37=8051H   38=806EH   41=8076H   44=807BH   50=8083H
 53=8089H   56=808FH   59=8095H   62=809BH   63=80A3H   64=80B4H
 65=80BFH   66=80D9H   68=80E1H   71=80E7H   74=80EDH   77=80F3H
 80=80F9H   88=80FFH   89=8105H   90=810BH   91=8111H   92=8117H
 93=811DH  101=8123H  102=8129H  103=812FH  129=8137H  133=813FH
134=8145H  135=814BH  136=8151H  139=8159H  143=8161H  150=8169H
156=816FH  157=8175H  158=817BH  159=8181H  164=8187H  174=818FH
179=8197H  183=819AH  187=81A0H  188=81ACH  189=81B4H  190=81C0H
191=81C4H  192=81C9H  193=81DFH  194=81E4H  195=81EEH  196=81FEH
197=8211H  198=821CH  199=8230H  200=8234H  201=8236H  202=8239H
203=8252H  204=8279H  205=8291H  206=8296H  207=82A5H  208=82B8H
209=82BCH  210=82BFH  211=82D8H  212=82FFH  213=8317H  214=831CH
215=832BH  216=833EH  217=8342H  218=8345H  219=8351H  220=8360H
221=8367H  222=836DH  223=836AH  224=8375H  227=837BH  228=8387H
229=83CFH  230=83DDH  231=83E8H  232=83E5H  233=83EFH  234=840AH
235=8418H  236=8423H  237=843CH  238=8442H  239=8455H  240=845DH
241=846AH  242=8470H  243=8483H  244=84A5H  245=84B0H  246=84BAH
247=84CAH  248=84D0H  249=84E3H  250=84F6H  251=850BH  252=8516H
253=8520H  254=852CH  255=8530H  263=8536H  264=853CH  265=8545H
266=854BH  267=855CH  268=857DH  269=8589H  272=8591H  273=8596H
274=859BH  275=85A0H  276=85A6H  277=85ACH  278=85B4H  279=85B9H
280=85CFH  281=85D2H  282=85D7H  283=85E2H  284=85ECH  285=85F5H
286=85FBH  287=8601H  288=8606H  289=860BH  290=8616H  291=8620H
292=8629H  293=862FH  294=8637H  295=863AH  296=863FH  297=864AH
298=8654H  299=865AH  300=866DH  301=867BH  302=868CH  303=86A0H
304=86A9H  305=86BDH  306=86C6H  307=86DAH  308=86E3H  309=86F7H
310=8700H  311=8714H  312=871DH  313=8723H  314=8736H  315=8739H
316=873DH  317=8743H  318=874BH  319=8751H  320=875EH  321=8764H
322=876AH  323=876FH  324=8777H  325=878AH  326=878DH  327=87A3H
328=87AEH  329=87C8H  330=87E2H  331=87E7H  332=880DH  333=8811H
334=883CH  335=8840H  336=8851H  337=8859H  338=8862H  339=8878H
340=887DH  341=88A3H  342=88A7H  343=88B8H  344=88C0H  345=88C9H
```

346=88D5H 347=88DBH 350=88E0H 351=88E6H 352=88ECH 353=88F5H
354=88FEH 356=88FBH 357=8909H 358=890DH 359=8919H 360=892CH
361=8941H 362=8956H 363=896BH 364=8980H 365=8995H 366=89AAH
367=89BFH 368=89D4H 369=89E9H 370=89FEH 371=8A13H 372=8A28H
373=8A3DH 374=8A52H 375=8A67H 376=8A7CH 377=8A91H 378=8AA6H
379=8ABBH 380=8AD0H 381=8AE5H 382=8AFAH 383=8B0FH 384=8B24H
385=8B6BH 386=8B79H 387=8B83H 388=8B9BH 389=8BAAH 390=8BADH
391=8BD0H 392=8BD9H 393=8BDFH 394=8BE4H 395=8BF0H 396=8C0CH
397=8C26H 398=8C29H 399=8C4CH 400=8C55H 401=8C5BH 402=8C60H
403=8C71H 404=8C7AH 405=8C7FH 406=8C82H 410=8C88H 411=8C90H
412=8CA5H 413=8CB1H 414=8CC9H 415=8CD8H 416=8CDBH 417=8CFEH
418=8D07H 419=8D0DH 420=8D12H 421=8D1EH 422=8D3AH 423=8D54H
424=8D57H 425=8D7AH 426=8D83H 427=8D89H 428=8D8EH 429=8D9FH
430=8DA8H 431=8DADH 432=8DB0H 436=8DB6H 437=8DBAH 438=8DC2H
439=8DC8H 440=8DDAH 441=8DDDH 442=8DE2H 443=8DE5H 444=8DE9H
445=8DF7H 446=8DFAH 447=8E15H 448=8E32H 449=8E3BH 450=8E41H
451=8E46H 452=8E52H 453=8E6EH 454=8E88H 455=8E8BH 456=8EA6H
457=8EC3H 458=8ECCH 459=8ED2H 460=8ED7H 461=8EE8H 462=8EF1H
463=8EF6H 464=8EF9H 470=8EFEH 471=8F04H 472=8F0AH 473=8F20H
474=8F2EH 475=8F31H 476=8F3FH 477=8F45H 478=8F4DH 479=8F55H
480=8F5DH 481=8F65H 482=8F6DH 483=8F75H 484=8F7DH 485=8F85H
486=8F8DH 487=8F95H 488=8F9DH 489=8FA5H 490=8FADH 491=8FB5H
492=8FBDH 493=8FC5H 494=8FCDH 495=8FD5H 496=8FDDH 497=8FE5H
498=8FEDH 499=8FF5H 500=8FFDH 501=9005H 502=900DH 503=9053H
506=9059H 507=9061H 508=9067H 509=906FH 510=9077H 511=907FH
512=9087H 513=908FH 514=9097H 515=909FH 516=90A7H 517=90AFH
518=90D5H 519=90D9H 520=90ECH 521=9105H 522=910CH 523=9116H
524=911CH 525=9128H 526=9131H 527=9134H 532=9138H 533=9140H
534=9146H 535=915AH 536=915EH 537=917AH 538=91A8H 539=91C0H
540=91D7H 541=91EAH 542=921BH 543=922DH 544=922EH 545=9231H
546=9235H 547=9245H 548=9249H 549=9265H 550=9293H 551=92ABH
552=92C2H 553=92D5H 554=92EEH 555=9306H 556=9318H 557=9319H
558=931DH 559=9325H 560=932BH 561=9331H 562=9337H 563=9341H
564=9344H 565=9354H 566=9368H 567=937CH 568=9390H 569=939FH

570=93CCH 571=93D0H 572=93D4H 573=93D6H 574=93D9H 575=93E9H
576=93FDH 577=9411H 578=9425H 579=9439H 580=944DH 581=945CH
582=9489H 583=94AEH 584=94BEH 585=94E9H 586=94F4H 587=9507H
588=951BH 589=952AH 590=9557H 591=955EH 592=956EH 593=9582H
594=9596H 595=95AAH 596=95BEH 597=95D2H 598=95E1H 599=960EH
600=9615H 603=9619H 604=961BH 605=961EH 606=963AH 607=9668H
608=9680H 609=9691H 610=96A5H 611=96B9H 612=96CDH 613=96EAH
614=9701H 615=9710H 616=9746H 617=974DH 619=9751H 620=9752H
621=9755H 622=976EH 623=979CH 624=97B4H 625=97C7H 626=97E4H
627=97FBH 628=980AH 629=9837H 630=983EH 632=9842H 633=9844H
634=9847H 635=9860H 636=988EH 637=98A6H 638=98B9H 639=98D6H
640=98EDH 641=98FCH 642=9929H 643=9930H 645=9934H 646=9936H
647=9939H 648=9945H 649=995CH 650=9970H 651=997FH 652=99A1H
653=99CEH 654=99E6H 655=99F7H 656=9A0BH 657=9A1FH 658=9A33H
659=9A50H 660=9A67H 661=9A76H 662=9A8FH 663=9AACH 664=9AB0H
665=9AB6H 666=9AB9H 667=9AC9H 668=9ADDH 669=9AECH 670=9AF7H
671=9B19H 672=9B1DH 673=9B25H 674=9B2CH 675=9B2FH 676=9B32H

APPENDIX F

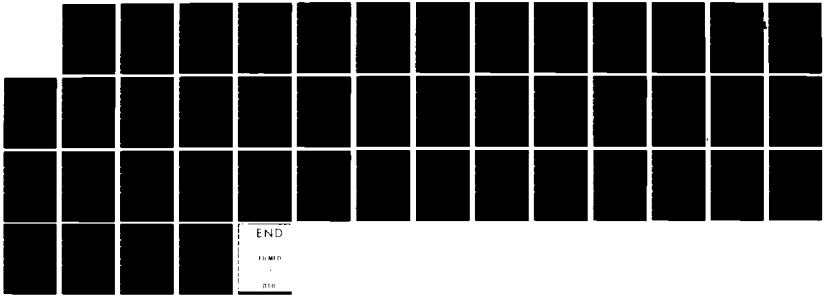
VOICE PROGRAM SYMBOL TABLE
MEMORY MAP

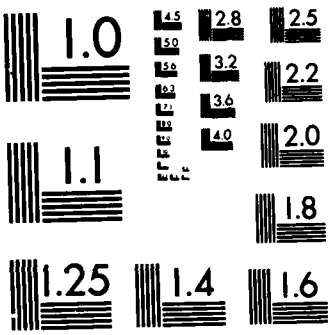
STACK SIZE = 4 BYTES

MEMORY.....9C00H
INIT1.....8003H
INIT2.....803AH
INIT3.....806EH
INIT4.....807BH
INIT5.....80D9H
INIT6.....812FH
INIT7.....8137H
INIT8.....8187H
INIT9.....818FH
VMODEPTR.....9BA6H
DESTPTR.....9BA8H
DESTFLAGPTR.....9BAAH
SOURCEFLAGPTR.....9BACH
WORDLENGTHPTR.....9BAEH
PHONEMELENGTHPTR.....9BB0H
WIPTR.....9BB2H
WTABLECOUNTPTR.....9BB4H
VIPTR.....9BB6H
WORDSTARTLOCPTR.....9BB8H
WORDENDLOCPTR.....9BBAH
VOICEMODETEST.....819AH
SOURCEFLAGSTORE.....81CEH
WORDCOUNTER.....8530H
DESTINATIONFLAGSTORE.....81FEH
VMODEERROR.....8230H
STOREMODETEST.....8345H
VMINCHARTEST.....834EH
VSPACECHARTEST.....835DH
RAMSTORE.....8375H
PHONEMELENGTHTEST.....83E5H
WSTORE.....845AH
VERRORHDR.....8051H
WTABLEPTR.....9BBCH
CCPTR.....9BBEH
CHARSTOREPTR.....9BC0H
OUTTABLE1PTR.....9BC2H
TC1PTR.....9BC4H
MSGCOUNT1PTR.....9BC6H
WAITING1PTR.....9BC8H
OUTTABLEPTR.....9BCAH
TCPTR.....9BCCH
MSGCOUNTPTR.....9BCEH
WAITINGPTR.....9BD0H
SPELLINGMODEFLAGPTR.....9BD2H
MSGENDFLAGPTR.....9BD4H
WORDMODEFLAGPTR.....9BD6H
PHONEMEMODEFLAGPTR.....9BD8H
PAUSEFLAGPTR.....9BDAH
INVCHARFLAGPTR.....9BDCH
WORDBEGINLOCPTR.....9BDEH
WORDCOUNTPTR.....9BE0H
WORDPOINTERLOCPTR.....9BE2H
SPELLINGMODETEST.....85C1H
INCWORDCOUNT.....865AH
WORDTERMTEST.....8692H
WORDOVERTEST.....8723H
TABLELOOKUP.....88DBH
PAUSEFLAGENDSET.....875EH
SPACEOVERTEST.....854BH
WORDCOUNTTEST.....8792H

AD-A123 671 AFSATCOM - COMPATIBLE 75 B/S VOICE SYSTEM HARDWARE AND SOFTWARE(U) MITRE CORP BEDFORD MA J HANDWERKER DEC 82 MTR-8689 ESD-TR-82-396 F19628-82-C-0001 2/2

UNCLASSIFIED F/G 17/2 NL





WORDBUFFER.....9134H
INVCHARFLAGCHECK.....88C9H
PREFIXSUFFIXMODETEST.....85F5H
PHONEMEMODETEST.....8629H
WORDINIT.....8589H
WORDTABLESELECT.....88FBH
PREFIXSUFFIXLOOKUP.....8C82H
TABINIT.....8151H
COMPUTELENGTHPTR.....8B7DH
WORDCOUNTMATCH.....8B98H
WORDCHARMATCH.....8BEAH
RAMCOUNTMATCH.....8DE5H
RAMCHARMATCH.....8E4CH
COMPUTERAMLENGTHPTR.....8DC2H
RAMTABLELOOKUP.....8DB0H
SPELLINGLOOKUP.....8EF9H
COMPUTEPSLENGTHPTR.....8CABH
PSWORDCOUNTMATCH.....8CC6H
PSWORDCHARMATCH.....8D18H
TABMATCHFLAGPTR.....9BE4H
TABPTRPTR.....9BE6H
PSTABPTRPTR.....9BE8H
TABLENGTHPTRPTR.....9BEAH
TABSTRINGPTRPTR.....9BECH
TABLOC.....9BEEH
SPELLINGWORDBUFFERPTR.....9BF0H
SPELLINGPTRSELECT.....8F0AH
SIPTR.....9BF2H
TIPTR.....9BF4H
INPUTWORDCOUNTPTR.....9BF6H
SPELLINGTABPTRPTR.....9BF8H

SPELLINGTABLOC.....9BFAH
VERIFYMSGSTORE.....9146H
VERIFYMSGOVERTEST.....9319H
WORDROMFORMATTER.....974DH
SPELLINGFORMATTER.....93D0H
PHONEMEFORMATTER.....9615H
LOOKUPMSGSTORE.....932BH
LOOKUPMSGOVERTEST.....9AB0H
PSFORMATTER.....983EH
RAMFORMATTER.....9930H
UIPTR.....9BFCH
RAMPHONEMELENGTHPTR.....9BFEH
INVCHARTEST.....87A8H

APPENDIX G

VOICE PROGRAM VOCABULARY TABLE
ROM LISTING

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B000=31 41 31 30 36 34 34 41 42 4C 45 31 30 36 39 35    1A10644ABLE10695
B010=41 42 4F 52 54 31 30 36 45 35 41 42 4F 55 54 31    ABORT106E5ABOUT1
B020=30 37 34 35 41 42 4F 56 45 31 30 37 41 36 41 43    0745ABOVE107A6AC
B030=43 45 50 54 31 30 37 46 36 41 43 43 45 53 53 31    CEPT107F6ACCESS1
B040=30 38 37 37 41 43 43 4F 55 4E 54 31 30 38 46 34    0877ACCOUNT108F4
B050=41 43 49 44 31 30 39 36 33 41 43 54 31 30 39 42    ACID10963ACT109B
B060=36 41 43 54 49 56 45 31 30 39 46 36 41 43 54 55    6ACTIVE109F6ACTU
B070=41 4C 31 30 41 35 33 41 44 44 31 30 41 44 37 41    AL10A53ADD10AD7A
B080=44 44 52 45 53 53 31 30 42 30 38 41 44 4A 41 43    DDRESS10B08ADJAC
B090=45 4E 54 31 30 42 45 36 41 44 4A 55 53 54 31 30    ENT10BE6ADJUST10
B0A0=42 37 37 41 44 56 41 4E 43 45 31 30 43 37 36 41    B77ADVANCE10C76A
B0B0=44 56 49 53 45 31 30 44 30 36 41 46 46 45 43 54    DVISE10D06AFFECT
B0C0=31 30 44 38 35 41 46 54 45 52 31 30 44 45 35 41    10D85AFTER10DE5A
B0D0=47 41 49 4E 31 30 45 33 33 41 47 45 31 30 45 38    GAIN10E33AGE10E8
B0E0=35 41 47 45 4E 54 31 30 45 44 35 41 48 45 41 44    5AGENT10ED5AHEAD
B0F0=31 30 46 34 33 41 49 44 31 30 46 39 33 41 49 52    10F43AID10F93AIR
B100=31 30 46 44 35 41 4C 41 52 4D 31 31 30 30 35 41    10FD5ALARM11005A
B110=4C 45 52 54 31 31 30 35 33 41 4C 4C 31 31 30 41    LERT11053ALL110A
B120=38 41 4C 4C 4F 43 41 54 45 31 31 30 43 35 41 4C    8ALLOCATE110C5AL
B130=4C 4F 57 31 31 31 34 35 41 4C 50 48 41 31 31 31    LOW11145ALPHA111
B140=39 37 41 4C 52 45 41 44 59 31 31 31 45 34 41 4C    97ALREADY111E4AL
B150=53 4F 31 31 32 35 38 41 4C 54 49 54 55 44 45 31    SO11258ALTITUDE1
B160=31 32 41 38 41 4C 55 4D 49 4E 55 4D 31 31 33 34    12A8ALUMINUM1134
B170=32 41 4D 31 31 33 44 37 41 4D 45 52 49 43 41 31    2AM113D7AMERICA1
B180=31 34 30 36 41 4D 4F 55 4E 54 31 31 34 38 33 41    1406AMOUNT11483A
B190=4D 50 31 31 34 46 37 41 4D 50 4C 49 46 59 31 31    MP114F7AMPLIFY11
B1A0=35 33 32 41 4E 31 31 35 44 33 41 4E 44 31 31 36    532AN115D3AND116
B1B0=30 35 41 4E 47 4C 45 31 31 36 34 37 41 4E 4F 54    05ANGLE11647ANOT
B1C0=48 45 52 31 31 36 41 36 41 4E 53 57 45 52 31 31    HER116A6ANSWER11
B1D0=37 30 33 41 4E 59 31 31 37 35 3A 41 50 4F 53 54    703ANY1175:APOST
B1E0=52 4F 50 48 45 31 31 37 39 38 41 50 50 52 4F 41    ROPHE11798APPROA
B1F0=43 48 31 31 38 33 37 41 50 50 52 4F 56 45 31 31    CH11837APPROVE11
B200=38 41 3B 41 50 50 52 4F 58 49 4D 41 54 45 31 31    8A;APPROXIMATE11
B210=39 43 35 41 50 52 49 4C 31 31 41 38 39 41 52 43    9C5APRIL11A89ARC
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B220=48 49 54 45 43 54 31 31 41 45 33 41 52 45 32 36    HITECT11AE3ARE26
B230=43 39 34 41 52 45 41 31 31 42 37 36 41 52 52 49    C94AREA11B76ARRI
B240=56 45 31 31 42 43 35 41 52 52 4F 57 31 31 43 32    VE11BC5ARROW11C2
B250=37 41 52 54 49 43 4C 45 31 31 43 37 32 41 53 31    7ARTICLE11C72AS1
B260=31 43 45 35 41 53 43 49 49 31 31 44 31 33 41 53    1CE5ASCII11D13AS
B270=4B 31 31 44 36 38 41 53 53 45 4D 42 4C 45 31 31    K11D68ASSEMBLE11
B280=44 41 35 41 53 53 45 54 31 31 45 32 36 41 53 53    DA5ASSET11E26ASS
B290=49 47 4E 31 31 45 37 36 41 53 53 49 53 54 31 31    IGN11E76ASSIST11
B2A0=45 44 39 41 53 53 4F 43 49 41 54 45 31 31 46 33    ED9ASSOCIATE11F3
B2B0=36 41 53 53 55 4D 45 31 32 30 32 32 41 54 31 32    6ASSUME12022AT12
B2C0=30 38 33 41 54 45 31 39 38 33 36 41 54 54 41 43    083ATE19836ATTAC
B2D0=48 31 32 30 42 37 41 54 54 45 4D 50 54 31 32 31    H120B7ATTEMPT121
B2E0=31 35 41 55 44 49 4F 31 32 31 45 36 41 55 47 55    15AUDIO121E6AUGU
B2F0=53 54 31 32 32 33 39 41 55 54 48 4F 52 49 5A 45    ST12239AUTHORIZE
B300=31 32 32 39 39 41 55 54 4F 4D 41 54 49 43 31 32    12299AUTOMATIC12
B310=33 30 39 41 56 41 49 4C 41 42 4C 45 31 32 33 41    309AVAILABLE123A
B320=37 41 56 45 52 41 47 45 31 32 34 33 35 41 56 4F    7AVERAGE12435AVO
B330=49 44 31 32 34 41 36 41 54 54 45 4E 44 31 32 31    ID124A6ATTEND121
B340=38 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    8000000000000000
B350=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
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B3B0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
B3C0=30 30 30 30 30 30 30 30 31 42 31 32 35 31 34 42    000000001B12514B
B3D0=41 43 4B 31 32 35 34 33 42 41 44 31 32 35 38 35    ACK12543BAD12585
B3E0=42 41 44 47 45 31 32 35 43 33 42 41 47 31 32 36    BADGE125C3BAG126
B3F0=31 37 42 41 4C 41 4E 43 45 31 32 36 35 34 42 41    17BALANCE12654BA
B400=4C 4C 31 32 36 44 34 42 41 4E 44 31 32 37 31 34    LL126D4BAND12714
B410=42 41 4E 4B 31 32 37 36 33 42 41 52 31 32 37 42    BANK12763BAR127B
B420=34 42 41 53 45 31 32 37 46 35 42 41 53 49 43 31    4BASE127F5BASIC1
B430=32 38 34 33 42 41 54 31 32 38 41 35 42 41 54 43    2843BAT128A5BATC
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B440=48 31 32 38 45 34 42 41 54 48 31 32 39 33 37 42   H128E4BATH12937B
B450=41 54 54 45 52 59 31 32 39 38 32 42 45 31 32 35   ATTERY12982BE125
B460=31 33 42 45 44 31 32 39 45 34 42 45 45 4E 31 32   13BED129E4BEEN12
B470=41 32 34 42 45 45 50 31 32 41 36 36 42 45 46 4F   A24BEEP12A66BEFO
B480=52 45 31 32 41 41 35 42 45 47 49 4E 31 32 42 30   RE12AA5BEGIN12B0
B490=34 42 45 4C 4C 31 32 42 36 35 42 45 4C 4F 57 31   4BELL12B65BELOW1
B4A0=32 42 41 34 42 45 4E 44 31 32 43 30 34 42 45 53   2BA4BEND12C04BES
B4B0=54 31 32 43 35 34 42 45 54 41 31 32 43 41 36 42   T12C54BETA12CA6B
B4C0=45 54 54 45 52 31 32 44 30 37 42 45 54 57 45 45   ETTER12D07BETWEE
B4D0=4E 31 32 44 35 33 42 49 44 31 32 44 43 33 42 49   N12D53BID12DC3BI
B4E0=47 31 32 45 30 34 42 49 4C 4C 31 32 45 34 37 42   G12E04BILL12E47B
B4F0=49 4C 4C 49 4F 4E 31 32 45 38 33 42 49 4E 31 32   ILLION12E83BIN12
B500=45 46 36 42 49 4E 41 52 59 31 32 46 33 38 42 49   EF6BINARY12F38BI
B510=52 54 48 44 41 59 31 32 46 42 33 42 49 54 31 33   RTHDAY12FB3BIT13
B520=30 33 34 42 49 54 45 31 33 30 37 35 42 4C 41 43   034BITE13075BLAC
B530=4B 31 33 30 43 35 42 4C 41 4E 4B 31 33 31 31 34   K130C5BLANK13114
B540=42 4C 45 57 31 33 32 38 35 42 4C 49 4E 44 31 33   BLEW13285BLIND13
B550=31 37 35 42 4C 4F 43 4B 31 33 31 45 35 42 4C 4F   175BLOCK131E5BLO
B560=57 4E 31 33 32 33 34 42 4C 55 45 31 33 32 38 34   WN13234BLUE13284
B570=42 4C 55 52 31 33 32 44 35 42 4F 41 52 44 31 33   BLUR132D5BOARD13
B580=33 31 34 42 4F 4C 54 31 33 33 36 34 42 4F 4E 44   314BOLT13364BOND
B590=31 33 33 42 34 42 4F 4F 4B 31 33 34 30 35 42 4F   133B4BOOK13405BO
B5A0=52 45 44 31 33 33 31 34 42 4F 53 53 31 33 34 34   RED13314BOSS1344
B5B0=36 42 4F 54 48 45 52 31 33 34 38 36 42 4F 54 54   6BOTHER13486BOTT
B5C0=4F 4D 31 33 34 44 36 42 4F 55 47 48 54 31 33 35   OM134D6BOUGHT135
B5D0=33 33 42 4F 58 31 33 35 37 35 42 52 41 43 45 31   33BOX13575BRACE1
B5E0=33 35 44 35 42 52 41 49 4E 31 33 36 32 35 42 52   35D5BRAIN13625BR
B5F0=41 4B 45 31 33 37 35 36 42 52 41 4E 43 48 31 33   AKE13756BRANCH13
B600=36 37 35 42 52 41 56 4F 31 33 36 45 35 42 52 45   675BRAVO136E5BRE
B610=41 4B 31 33 37 35 36 42 52 49 44 47 45 31 33 37   AK13756BRIDGE137
B620=41 35 42 52 49 45 46 31 33 38 30 36 42 52 49 47   A5BRIEF13806BRIG
B630=48 54 31 33 38 35 35 42 52 49 4E 47 31 33 38 42   HT13855BRING138B
B640=35 42 52 4F 4B 45 31 33 39 30 37 42 52 4F 55 47   5BROKE13907BROUG
B650=48 54 31 33 39 35 35 42 52 4F 57 4E 31 33 39 39   HT13955BROWN1399
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B660=36 42 55 42 42 4C 45 31 33 39 46 36 42 55 44 47    6BUBBLE139F6BUDG
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B680=55 49 4C 44 31 33 42 30 38 42 55 53 49 4E 45 53    UILD13B08BUSINES
B690=53 31 33 42 39 34 42 55 53 59 31 33 43 30 33 42    S13B94BUSY13C03B
B6A0=55 54 31 33 43 35 36 42 55 54 54 4F 4E 31 33 43    UT13C56BUTTON13C
B6B0=39 33 42 55 59 31 33 43 46 32 42 59 31 33 43 46    93BUY13CF2BY13CF
B6C0=33 42 59 45 31 33 43 46 34 42 59 54 45 31 33 30    3BYE13CF4BYTE130
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B760=31 33 44 37 38 43 41 4C 45 4E 44 41 52 31 33 44    13D78CALENDAR13D
B770=44 39 43 41 4C 49 42 52 41 54 45 31 33 45 35 34    D9CALIBRATE13E54
B780=43 41 4C 4C 31 33 45 46 34 43 41 4D 45 31 33 46    CALL13EF4CAME13F
B790=33 33 43 41 4E 31 33 46 38 36 43 41 4E 43 45 4C    33CAN13F86CANCEL
B7A0=31 33 46 43 37 43 41 50 41 42 4C 45 31 34 30 33    13FC7CAPABLE1403
B7B0=39 43 41 50 41 43 49 54 4F 52 31 34 30 44 38 43    9CAPACITOR140D8C
B7C0=41 50 41 43 49 54 59 31 34 31 34 33 43 41 52 31    APACITY14143CAR1
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B7E0=45 31 34 32 35 39 43 41 52 50 45 4E 54 45 52 31    E14259CARPENTER1
B7F0=34 32 39 38 43 41 52 52 49 41 47 45 31 34 33 31    4298CARRIAGE1431
B800=35 43 41 52 52 59 31 34 33 38 36 43 41 52 54 4F    5CARRY14386CARTO
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B820=41 53 48 31 34 34 38 38 43 41 53 53 45 54 54 45    ASH14488CASSETTE
B830=31 34 34 43 37 43 41 54 41 4C 4F 47 31 34 36 32    144C7CATALOG1462
B840=38 43 41 54 45 47 4F 52 59 31 34 35 39 37 43 41    8CATEGORY14597CA
B850=55 54 49 4F 4E 31 34 36 42 34 43 45 4E 54 31 34    UTION146B4CENT14
B860=37 31 36 43 45 4E 54 45 52 31 34 37 36 35 43 45    716CENTER14765CE
B870=4E 54 49 31 34 37 43 3A 43 45 4E 54 49 47 52 41    NTI147C:CENTIGRA
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B880=44 45 31 34 38 33 37 43 45 52 54 49 46 59 31 34    DE14837CERTIFY14
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B8A0=41 52 41 43 54 45 52 31 34 39 44 36 43 48 41 52    ARACTER149D6CHAR
B8B0=47 45 31 34 41 34 37 43 48 41 52 4C 49 45 31 34    GE14A47CHARLIE14
B8C0=41 41 35 43 48 41 52 54 31 34 42 30 35 43 48 45    AA5CHART14B05CHE
B8D0=43 4B 31 34 42 35 35 43 48 45 45 52 31 34 42 41    CK14B55CHEER14BA
B8E0=34 43 48 49 50 31 34 42 46 36 43 48 4F 49 43 45    4CHIP14BF6CHOICE
B8F0=31 34 43 34 36 43 49 52 43 4C 45 31 34 43 42 37    14C46CIRCLE14CB7
B900=43 49 52 43 55 49 54 31 34 44 31 34 43 49 54 59    CIRCUIT14D14CITY
B910=31 34 44 37 35 43 4C 41 49 4D 31 34 44 42 35 43    14D75CLAIM14DB5C
B920=4C 41 53 53 31 34 45 31 35 43 4C 45 41 4E 31 34    LASS14E15CLEAN14
B930=45 36 35 43 4C 45 41 52 31 34 45 42 35 43 4C 45    E65CLEAR14EB5CLE
B940=52 4B 31 34 46 30 34 43 4C 49 50 31 34 46 34 35    RK14F04CLIP14F45
B950=43 4C 4F 43 4B 31 34 46 39 35 43 4C 4F 53 45 31    CLOCK14F95CLOSE1
B960=34 46 45 35 43 4C 4F 55 44 31 35 30 41 36 43 4F    4FE5CLOUD150A6CO
B970=41 52 53 45 31 36 39 33 34 43 4F 44 45 31 35 31    ARSE16934CODE151
B980=30 34 43 4F 49 4E 31 35 31 35 36 43 4F 4C 4C 41    04COIN15156COLLA
B990=52 31 35 31 42 37 43 4F 4C 4C 45 43 54 31 35 32    R151B7COLLECT152
B9A0=30 35 43 4F 4C 4F 4E 31 35 32 36 35 43 4F 4C 4F    05COLON15265COLO
B9B0=52 31 35 32 44 36 43 4F 4C 55 4D 4E 31 35 33 32    R152D6COLUMN1532
B9C0=37 43 4F 4D 42 49 4E 45 31 35 33 38 35 43 4F 4D    7COMBINE15385COM
B9D0=4D 41 31 35 34 30 37 43 4F 4D 4D 41 4E 44 31 35    MA15407COMMAND15
B9E0=34 35 38 43 4F 4D 4D 45 52 43 45 31 35 34 43 3A    458COMMERCE154C:
B9F0=43 4F 4D 4D 45 52 43 49 41 4C 31 35 35 32 3B 43    COMMERCIAL1552;C
BA00=4F 4D 4D 55 4E 49 43 41 54 45 31 35 35 41 37 43    OMMUNICATE155A7C
BA10=4F 4D 50 41 4E 59 31 35 36 36 37 43 4F 4D 50 41    OMPANY15667COMPA
BA20=52 45 31 35 36 45 37 43 4F 4D 50 49 4C 45 31 35    RE156E7COMPILE15
BA30=37 36 38 43 4F 4D 50 4C 45 54 45 31 35 38 30 36    768COMPLETE15806
BA40=43 4F 4D 50 4C 59 31 35 38 39 39 43 4F 4D 50 4F    COMPLY15899COMPO
BA50=4E 45 4E 54 31 35 39 32 38 43 4F 4D 50 55 54 45    NENT15928COMPUTE
BA60=52 31 35 39 43 37 43 4F 4E 43 45 41 4C 31 35 41    R159C7CONCEAL15A
BA70=35 38 43 4F 4E 44 45 4E 53 45 31 35 41 43 39 43    58CONDENSE15AC9C
BA80=4F 4E 44 49 54 49 4F 4E 31 35 42 34 37 43 4F 4E    ONDITION15B47CON
BA90=46 49 52 4D 31 35 42 44 37 43 4F 4E 46 55 53 45    FIRM15BD7CONFUSE
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BAA0=31 35 43 34 39 43 4F 4E 46 55 53 49 4F 4E 31 35    15C49CONFUSION15
BAB0=43 44 3F 43 4F 4E 47 52 41 54 55 4C 41 54 49 4F    CD?CONGRATULATIO
BAC0=4E 53 31 35 44 38 37 43 4F 4E 4E 45 43 54 31 35    NS15D87CONNECT15
BAD0=45 38 37 43 4F 4E 53 4F 4C 45 31 35 45 46 37 43    E87CONSOLE15EF7C
BAE0=4F 4E 53 55 4C 54 31 35 46 45 37 43 4F 4E 53 55    ONSULT15FE7CONSU
BAF0=4D 45 31 36 30 36 37 43 4F 4E 54 41 49 4E 31 36    ME16067CONTAIN16
BB00=30 45 38 43 4F 4E 54 49 4E 55 45 31 36 31 37 38    0E8CONTINUE16178
BB10=43 4F 4E 54 52 41 43 54 31 36 32 31 38 43 4F 4E    CONTRACT16218CON
BB20=54 52 41 53 54 31 36 32 42 37 43 4F 4E 54 52 4F    TRAST162B7CONTRO
BB30=4C 31 36 33 35 3A 43 4F 4E 56 45 4E 49 45 4E 54    L1635:CONVENIENT
BB40=31 36 33 44 36 43 4F 4E 56 45 59 31 36 34 37 36    163D6CONVEY16476
BB50=43 4F 50 50 45 52 31 36 34 45 34 43 4F 50 59 31    COPPER164E4COPY1
BB60=36 35 33 37 43 4F 52 52 45 43 54 31 36 35 38 3A    6537CORRECT1658:
BB70=43 4F 52 52 45 53 50 4F 4E 44 31 36 36 30 36 43    CORRESPOND16606C
BB80=4F 53 49 4E 45 31 36 36 41 34 43 4F 53 54 31 36    OSINE166A4COST16
BB90=37 31 35 43 4F 55 4C 44 31 36 37 36 35 43 4F 55    715COULD16765COU
BBA0=4E 54 31 36 37 42 37 43 4F 55 4E 54 52 59 31 36    NT167B7COUNTRY16
BBB0=38 31 36 43 4F 55 50 4C 45 31 36 38 37 37 43 4F    816COUPLE16877CO
BBC0=55 52 41 47 45 31 36 38 44 36 43 4F 55 52 53 45    URAGE168D6COURSE
BBD0=31 36 39 33 35 43 4F 55 52 54 31 36 39 38 35 43    16935COURT16985C
BBE0=4F 56 45 52 31 36 39 44 35 43 52 41 4E 45 31 36    OVER169D5CRANE16
BBF0=41 32 35 43 52 41 53 48 31 36 41 38 36 43 52 45    A25CRASH16A86CRE
BC00=41 53 45 31 36 41 44 36 43 52 45 41 54 45 31 36    ASE16AD6CREATE16
BC10=42 32 38 43 52 45 41 54 49 4F 4E 31 36 42 38 36    B28CREATION16B86
BC20=43 52 45 44 49 54 31 36 43 30 34 43 52 45 57 31    CREDIT16C04CREW1
BC30=36 43 37 38 43 52 49 54 49 43 41 4C 31 36 43 43    6C78CRITICAL16CC
BC40=35 43 52 4F 53 53 31 36 44 34 35 43 52 4F 57 44    5CROSS16D45CROWD
BC50=31 36 44 38 33 43 52 59 31 36 44 45 33 43 55 45    16D83CRY16DE3CUE
BC60=32 36 37 37 33 43 55 50 31 36 45 34 37 43 55 52    26773CUP16E47CUR
BC70=49 4F 55 53 31 36 45 38 38 43 55 52 52 45 4E 43    IOUS16E88CURRENC
BC80=59 31 36 45 46 37 43 55 52 52 45 4E 54 31 36 46    Y16EF7CURRENT16F
BC90=37 35 43 55 52 56 45 31 36 46 44 38 43 55 53 54    75CURVE16FD8CUST
BCA0=4F 4D 45 52 31 37 30 31 33 43 55 54 31 37 30 39    OMER17013CUT1709
BCB0=35 43 59 43 4C 45 31 37 30 44 30 30 30 30 30 30    5CYCLE170D000000
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BCD0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
BCE0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
BCF0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
BD00=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
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BD50=30 31 44 31 37 31 34 35 44 41 49 4C 59 31 37 31   01D17145DAILY171
BD60=37 36 44 41 4D 41 47 45 31 37 31 44 36 44 41 4E   76DAMAGE171D6DAN
BD70=47 45 52 31 37 32 34 34 44 41 52 4B 31 37 32 43   GER17244DARK172C
BD80=34 44 41 53 48 31 37 33 30 34 44 41 54 41 31 37   4DASH17304DATA17
BD90=33 34 34 44 41 54 45 31 37 33 39 33 44 41 59 31   344DATE17393DAY1
BDA0=37 33 45 34 44 45 41 44 31 37 34 32 34 44 45 41   73E4DEAD17424DEA
BDB0=46 31 37 34 36 36 44 45 41 4C 45 52 31 37 34 41   F17466DEALER174A
BDC0=34 44 45 41 52 31 37 34 46 35 44 45 42 49 54 31   4DEAR174F5DEBIT1
BDD0=37 35 33 34 44 45 42 54 31 37 35 39 38 44 45 43   7534DEBT17598DEC
BDE0=45 4D 42 45 52 31 37 35 44 36 44 45 43 49 44 45   EMBER175D6DECIDE
BDF0=31 37 36 35 37 44 45 43 49 4D 41 4C 31 37 36 43   17657DECIMAL176C
BE00=38 44 45 43 49 53 49 4F 4E 31 37 37 32 37 44 45   8DECISION17727DE
BE10=43 4C 49 4E 45 31 37 37 39 38 44 45 43 52 45 41   CLINE17798DECREA
BE20=53 45 31 37 38 31 36 44 45 44 55 43 54 31 37 38   SE17816DEDUCT178
BE30=38 34 44 45 45 50 31 37 38 46 34 44 45 45 52 31   84DEEP178F4DEER1
BE40=37 34 46 36 44 45 46 45 41 54 31 37 39 33 36 44   74F6DEFEAT17936D
BE50=45 46 45 4E 44 31 37 39 39 39 44 45 46 45 4E 53   EFEND17999DEFENS
BE60=49 56 45 31 37 41 30 35 44 45 46 45 52 31 37 41   IVE17A05DEFER17A
BE70=39 37 44 45 46 49 43 49 54 31 37 41 45 36 44 45   97DEFICIT17AE6DE
BE80=47 52 45 45 31 37 42 35 35 44 45 4C 41 59 31 37   GREE17B55DELAY17
BE90=42 42 36 44 45 4C 45 54 45 31 37 43 31 37 44 45   BB6DELETE17C17DE
BEA0=4C 49 56 45 52 31 37 43 37 35 44 45 4C 54 41 31   LIVER17C75DELTA1
BEB0=37 43 44 36 44 45 4D 41 4E 44 31 37 44 33 3B 44   7CD6DEMAND17D3;D
BEC0=45 4D 4F 4E 53 54 52 41 54 45 31 37 44 41 34 44   EMONSTRATE17DA4D
BED0=45 4E 59 31 37 45 35 37 44 45 53 54 52 4F 59 31   ENY17E57DESTROY1
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BEE0=37 45 42 36 44 45 54 41 49 4C 31 37 46 34 39 44   7EB6DETAIL17F49D
BEF0=45 54 45 52 4D 49 4E 45 31 37 46 43 36 44 45 56   ETERMINE17FC6DEV
BF00=49 43 45 31 38 30 33 33 44 45 57 31 38 43 34 3A   ICE18033DEW18C4:
BF10=44 49 41 47 4E 4F 53 54 49 43 31 38 30 41 34 44   DIAGNOSTIC180A4D
BF20=49 41 4C 31 38 31 36 3A 44 49 43 54 49 4F 4E 41   IAL;816:DICTIONA
BF30=52 59 31 38 31 43 33 44 49 44 31 38 32 37 33 44   RY181C3DID18273D
BF40=49 45 31 38 32 42 34 44 49 45 54 31 38 32 46 36   IE182B4DIET182F6
BF50=44 49 46 46 45 52 31 38 33 35 3A 44 49 46 46 45   DIFFER1835:DIFFE
BF60=52 45 4E 43 45 31 38 33 41 39 44 49 46 46 45 52   RENCE183A9DIFFER
BF70=45 4E 54 31 38 34 32 35 44 49 47 49 54 31 38 34   ENT18425DIGIT184
BF80=39 37 44 49 47 49 54 41 4C 31 38 34 46 34 44 49   97DIGITAL184F4DI
BF90=4D 45 31 38 35 37 35 44 49 4F 44 45 31 38 35 43   ME18575DIODE185C
BFA0=36 44 49 52 45 43 54 31 38 36 33 39 44 49 52 45   6DIRECT18639DIRE
BFB0=43 54 4F 52 59 31 38 36 39 34 44 49 52 54 31 38   CTORY18694DIRT18
BFC0=37 31 38 44 49 53 41 47 52 45 45 31 38 37 35 39   718DISAGREE18759
BFD0=44 49 53 41 50 50 45 41 52 31 38 37 44 3A 44 49   DISAPPEAR187D:DI
BFE0=53 43 4F 4E 4E 45 43 54 31 38 38 35 34 44 49 53   SCONNECT18854DIS
BFF0=4B 31 38 39 37 37 44 49 53 50 4C 41 59 31 38 39   K18977DISPLAY189
C000=43 38 44 49 53 54 41 4E 43 45 31 38 41 35 36 44   C8DISTANCE18A56D
C010=49 56 49 44 45 31 38 41 44 38 44 49 56 49 44 45   IVIDE18AD8DIVIDE
C020=4E 44 31 38 42 34 38 44 49 56 49 53 49 4F 4E 31   ND18B48DIVISION1
C030=38 42 44 32 44 4F 31 38 43 34 34 44 4F 43 4B 31   8BD2DO18C44DOCK1
C040=38 43 38 36 44 4F 43 54 4F 52 31 38 43 43 38 44   8C86DOCTOR18CC8D
C050=4F 43 55 4D 45 4E 54 31 38 44 32 34 44 4F 45 53   OCUMENT18D24DOES
C060=31 30 44 42 36 44 4F 4C 4C 41 52 31 38 44 46 34   10DB6DOLLAR18DF4
C070=44 4F 4E 45 31 38 45 34 34 44 4F 4F 52 31 38 45   DONE18E44DOOR18E
C080=38 36 44 4F 55 42 4C 45 31 38 45 43 35 44 4F 55   86DOUBLE18EC5DOU
C090=42 54 31 38 46 32 34 44 4F 57 4E 31 38 46 37 35   BT18F24DOWN18F75
C0A0=44 52 41 46 54 31 38 46 43 34 44 52 41 57 31 39   DRAFT18FC4DRAW19
C0B0=30 32 35 44 52 49 4C 4C 31 39 30 35 35 44 52 49   025DRILL19055DRI
C0C0=4E 4B 31 39 30 41 35 44 52 49 56 45 31 39 31 30   NK190A5DRIVE1910
C0D0=34 44 52 4F 50 31 39 31 36 34 44 52 55 4D 31 39   4DROP19164DRUM19
C0E0=31 42 33 44 52 59 31 39 32 30 33 44 55 45 31 38   1B3DRY19203DUE18
C0F0=43 34 34 44 55 4D 50 31 39 32 36 38 44 55 52 41   C44DUMP19268DURA
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C100=54 49 4F 4E 31 39 32 42 36 44 55 52 49 4E 47 31    TION192B6DURING1
C110=39 33 33 34 44 55 54 59 31 39 33 38 35 44 57 45    9334DUTY19385DWE
C120=4C 4C 31 39 33 45 37 44 49 53 43 55 53 53 31 38    LL193E7DISCUSS18
C130=38 46 30 30 30 30 30 30 30 30 30 30 30 30 30 30    8F000000000000000
C140=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C150=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C160=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C170=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C180=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C190=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C1A0=30 30 30 30 30 30 30 30 30 30 31 45 31 39 34 33    000000000001E1943
C1B0=34 45 41 43 48 31 39 34 35 33 45 41 52 31 39 34    4EACH19453EAR194
C1C0=39 35 45 41 52 4C 59 31 39 34 43 34 45 41 52 4E    95EARLY194C4EARN
C1D0=31 39 35 30 34 45 41 53 54 31 39 35 33 34 45 41    19504EAST19534EA
C1E0=53 59 31 39 35 37 34 45 43 48 4F 31 39 35 42 34    SY19574ECHO195B4
C1F0=45 44 47 45 31 39 36 30 34 45 44 49 54 31 39 36    EDGE19604EDIT196
C200=34 37 45 44 55 43 41 54 45 31 39 36 39 36 45 46    47EDUCATE19696EF
C210=46 45 43 54 31 39 37 31 39 45 46 46 49 43 49 45    FECT19719EFFICIE
C220=4E 54 31 39 37 37 36 45 46 46 4F 52 54 31 39 37    NT19776EFFORT197
C230=45 35 45 49 47 48 54 31 39 38 33 36 45 49 47 48    E5EIGHT19836EIGH
C240=54 48 31 39 38 37 36 45 49 47 48 54 59 31 39 38    TH19876EIGHTY198
C250=44 36 45 49 54 48 45 52 31 39 39 32 3B 45 4C 45    D6EITHER1992;ELE
C260=43 54 52 49 43 49 41 4E 31 39 39 45 3A 45 4C 45    CTRICIAN199E:ELE
C270=43 54 52 4F 4E 49 43 31 39 41 39 38 45 4C 45 56    CTRONIC19A98ELEV
C280=41 54 4F 52 31 39 42 33 36 45 4C 45 56 45 4E 31    ATOR19B36ELEVEN1
C290=39 42 42 38 45 4C 49 47 49 42 4C 45 31 39 43 32    9BB8ELIGIBLE19C2
C2A0=39 45 4C 49 4D 49 4E 41 54 45 31 39 43 42 34 45    9ELIMINATE19CB4E
C2B0=4C 53 45 31 39 44 34 34 45 4D 49 54 31 39 44 38    LSE19D44EMIT19D8
C2C0=36 45 4D 50 4C 4F 59 31 39 44 44 35 45 4D 50 54    6EMPLOY19DD5EMPT
C2D0=59 31 39 45 36 36 45 4E 41 42 4C 45 31 39 45 43    Y19E66ENABLE19EC
C2E0=37 45 4E 43 4C 4F 53 45 31 39 46 33 33 45 4E 44    7ENCLOSE19F33END
C2F0=31 39 46 42 37 45 4E 44 4F 52 53 45 31 39 46 46    19FB7ENDORSE19FF
C300=36 45 4E 47 49 4E 45 31 41 30 37 38 45 4E 47 49    6ENGINE1A078ENGI
C310=4E 45 45 52 31 41 30 45 37 45 4E 47 4C 49 53 48    NEER1A0E7ENGLISH
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C320=31 41 31 37 35 45 4E 54 45 52 31 41 31 44 35 45   1A175ENTER1A1D5E
C330=4E 54 52 59 31 41 32 32 37 45 50 53 49 4C 4F 4E   NTRY1A227EPSILON
C340=31 41 32 38 35 45 51 55 41 4C 31 41 33 30 39 45   1A285EQUAL1A309E
C350=51 55 49 50 4D 45 4E 54 31 41 33 35 35 45 52 41   QUIPMENT1A355ERA
C360=53 45 31 41 33 45 35 45 52 52 4F 52 31 41 34 33   SE1A3E5ERROR1A43
C370=36 45 53 43 41 50 45 31 41 34 38 36 45 53 43 52   6ESCAPE1A486ESCR
C380=4F 57 31 41 35 30 39 45 53 54 41 42 4C 49 53 48   OW1A509ESTABLISH
C390=31 41 35 37 36 45 53 54 41 54 45 31 41 36 30 38   1A576ESTATE1A608
C3A0=45 53 54 49 4D 41 54 45 31 41 36 38 35 45 58 41   ESTIMATE1A685EXA
C3B0=43 54 31 41 36 46 37 45 58 41 4D 49 4E 45 31 41   CT1A6F7EXAMINE1A
C3C0=37 38 36 45 58 43 45 45 44 31 41 38 32 36 45 58   786EXCEED1A826EX
C3D0=43 45 50 54 31 41 38 41 38 45 58 43 48 41 4E 47   CEPT1A8A8EXCHANG
C3E0=45 31 41 39 33 37 45 58 45 43 55 54 45 31 41 41   E1A937EXECUTE1AA
C3F0=30 36 45 58 45 4D 50 54 31 41 41 42 34 45 58 49   06EXEMPT1AAB4EXI
C400=54 31 41 42 35 36 45 58 50 45 43 54 31 41 42 44   T1AB56EXPECT1ABD
C410=38 45 58 50 45 44 49 54 45 31 41 43 37 36 45 58   8EXPEDITE1AC76EX
C420=50 45 4E 44 31 41 44 34 3A 45 58 50 45 52 49 4D   PEND1AD4:EXPERIM
C430=45 4E 54 31 41 44 45 38 45 58 50 4F 4E 45 4E 54   ENT1ADE8EXPONENT
C440=31 41 45 41 37 45 58 50 52 45 53 53 31 41 46 35   1AEA7EXPRESS1AF5
C450=39 45 58 54 45 4E 53 49 4F 4E 31 41 46 45 38 45   9EXTENSION1AFE8E
C460=4C 45 43 54 52 49 43 31 39 39 36 30 30 30 30 30   LECTRIC199600000
C470=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
C480=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
C490=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
C4A0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
C4B0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 31 46   00000000000001F1
C4C0=42 30 41 34 46 41 43 45 31 42 30 44 38 46 41 43   B0A4FACE1B0D8FAC
C4D0=49 4C 49 54 59 31 42 31 32 34 46 41 43 54 31 42   ILITY1B124FACT1B
C4E0=31 41 3A 46 41 48 52 45 4E 48 45 49 54 31 42 31   1A:FAHRENHEIT1B1
C4F0=46 34 46 41 49 4C 31 42 32 39 34 46 41 4C 4C 31   F4FAIL1B294FALL1
C500=42 32 46 35 46 41 4C 53 45 31 42 33 32 38 46 41   B2F5FALSE1B328FA
C510=4D 49 4C 49 41 52 31 42 33 36 33 46 41 52 31 42   MILIAR1B363FAR1B
C520=33 44 35 46 41 52 41 44 31 42 34 31 34 46 41 53   3D5FARAD1B414FAS
C530=54 31 42 34 38 35 46 41 55 4C 54 31 42 34 44 34   T1B485FAULT1B4D4
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C540=46 45 41 54 31 42 36 45 37 46 45 41 54 55 52 45    FEAT1B6E7FEATURE
C550=31 42 35 31 38 46 45 42 52 55 41 52 59 31 42 35    1B518FEBRUARY1B5
C560=37 37 46 45 44 45 52 41 4C 31 42 36 30 33 46 45    77FEDERAL1B603FE
C570=45 31 42 36 37 34 46 45 45 44 31 42 36 41 34 46    E1B674FEED1B6A4F
C580=45 45 54 31 42 36 45 36 46 45 4D 41 4C 45 31 42    EET1B6E6FEMALE1B
C590=37 32 35 46 49 45 4C 44 31 42 37 41 37 46 49 46    725FIELD1B7A7FIF
C5A0=54 45 45 4E 31 42 38 30 35 46 49 46 54 48 31 42    TEEN1B805FIFTH1B
C5B0=38 38 35 46 49 46 54 59 31 42 38 44 34 46 49 4C    885FIFTY1B8D4FIL
C5C0=45 31 42 39 33 34 46 49 4C 4C 31 42 39 39 35 46    E1B934FILL1B995F
C5D0=49 4E 41 4C 31 42 39 44 37 46 49 4E 41 4E 43 45    INAL1B9D7FINANCE
C5E0=31 42 41 33 34 46 49 4E 44 31 42 41 43 36 46 49    1BA34FIND1BAC6FI
C5F0=4E 47 45 52 31 42 42 32 36 46 49 4E 49 53 48 31    NGER1BB26FINISH1
C600=42 42 38 34 46 49 52 45 31 42 42 44 35 46 49 52    BB84FIRE1BBD5FIR
C610=53 54 31 42 43 32 33 46 49 54 31 42 43 37 34 46    ST1BC23FIT1BC74F
C620=49 56 45 31 42 43 42 33 46 49 58 31 42 44 30 37    IVE1BCB3FIX1BD07
C630=46 49 58 54 55 52 45 31 42 44 36 35 46 4C 41 53    FIXTURE1BD65FLAS
C640=48 31 42 44 46 34 46 4C 41 54 31 42 45 34 36 46    H1BDF4FLAT1BE46F
C650=4C 49 47 48 54 31 42 45 39 34 46 4C 49 50 31 42    LIGHT1BE94FLIP1B
C660=45 46 35 46 4C 4F 4F 52 31 42 46 34 34 46 4C 4F    EF5FLOOR1BF44FLO
C670=50 31 42 46 39 34 46 4C 4F 57 31 42 46 45 33 46    P1BF94FLOW1BFE3F
C680=4C 59 31 43 30 32 34 46 4F 4C 44 31 43 30 37 36    LY1C024FOLD1C076
C690=46 4F 4C 4C 4F 57 31 43 30 44 34 46 4F 4F 44 31    FOLLOW1C0D4FOOD1
C6A0=43 31 33 34 46 4F 4F 54 31 43 31 37 33 46 4F 52    C134FOOT1C173FOR
C6B0=31 43 35 37 35 46 4F 52 43 45 31 43 31 42 34 46    1C575FORCE1C1B4F
C6C0=4F 52 45 31 43 35 37 37 46 4F 52 45 4D 41 4E 31    ORE1C577FOREMAN1
C6D0=43 32 30 36 46 4F 52 47 45 54 31 43 32 37 37 46    C206FORGET1C277F
C6E0=4F 52 47 49 56 45 31 43 32 46 34 46 4F 52 4D 31    ORGIVE1C2F4FORM1
C6F0=43 33 37 36 46 4F 52 4D 41 54 31 43 33 43 35 46    C376FORMAT1C3C5F
C700=4F 52 54 59 31 43 34 34 37 46 4F 52 57 41 52 44    ORTY1C447FORWARD
C710=31 43 34 41 35 46 4F 55 4E 44 31 43 35 31 34 46    1C4A5FOUND1C514F
C720=4F 55 52 31 43 35 37 36 46 4F 55 52 54 48 31 43    OUR1C576FOURTH1C
C730=35 42 37 46 4F 58 54 52 4F 54 31 43 36 30 35 46    5B7FOXTROT1C605F
C740=52 41 4D 45 31 43 36 42 35 46 52 41 55 44 31 43    RAME1C6B5FRAUD1C
C750=37 31 34 46 52 45 45 31 43 37 35 36 46 52 45 4E    714FREE1C756FREN
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C760=43 48 31 43 37 39 39 46 52 45 51 55 45 4E 43 59    CH1C799FREQUENCY
C770=31 43 38 30 38 46 52 45 51 55 45 4E 54 31 43 38    1C808FREQUENT1C8
C780=41 36 46 52 49 44 41 59 31 43 39 32 36 46 52 49    A6FRIDAY1C926FRI
C790=47 48 54 31 43 39 42 34 46 52 4F 4D 31 43 41 31    GHT1C9B4FROM1CA1
C7A0=35 46 52 4F 4E 54 31 43 41 36 35 46 52 55 49 54    5FRONT1CA65FRUIT
C7B0=31 43 41 43 34 46 55 45 4C 31 43 42 31 34 46 55    1CAC4FUEL1CB14FU
C7C0=4C 4C 31 43 42 37 38 46 55 4E 43 54 49 4F 4E 31    LL1CB78FUNCTION1
C7D0=43 42 41 34 46 55 4E 44 31 43 43 32 37 46 55 52    CBA4FUND1CC27FUR
C7E0=4E 41 43 45 31 43 43 37 37 46 55 52 54 48 45 52    NACE1CC77FURTHER
C7F0=31 43 43 44 36 46 55 54 55 52 45 31 43 44 32 30    1CCD6FUTURE1CD20
C800=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C810=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C820=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C830=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C840=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C850=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
C860=30 30 30 30 30 30 30 30 31 47 31 43 44 39 34 47    000000001G1CD94G
C870=41 47 45 31 44 30 36 34 47 41 49 4E 31 43 44 44    AGE1D064GAIN1CDD
C880=34 47 41 49 54 31 44 30 31 36 47 41 4C 4C 4F 4E    4GAIT1D016GALLON
C890=31 43 45 32 34 47 41 4D 45 31 43 45 38 35 47 41    1CE24GAME1CE85GA
C8A0=4D 4D 41 31 43 45 44 33 47 41 50 31 43 46 33 36    MMA1CED3GAP1CF36
C8B0=47 41 52 41 47 45 31 43 46 37 33 47 41 53 31 43    GARAGE1CF73GAS1C
C8C0=46 44 34 47 41 54 45 31 44 30 31 35 47 41 55 47    FD4GATE1D015GAUG
C8D0=45 31 44 30 36 37 47 45 4E 45 52 41 4C 31 44 30    E1D067GENERAL1D0
C8E0=43 38 47 45 4E 45 52 41 54 45 31 44 31 34 39 47    C8GENERATE1D149G
C8F0=45 4E 54 4C 45 4D 45 4E 31 44 31 43 36 47 45 52    ENTLEMEN1D1C6GER
C900=4D 41 4E 31 44 32 36 33 47 45 54 31 44 32 44 34    MAN1D263GET1D2D4
C910=47 49 52 4C 31 44 33 31 34 47 49 56 45 31 44 33    GIRL1D314GIVE1D3
C920=35 35 47 4C 41 53 53 31 44 33 39 36 47 4C 49 54    55GLASS1D396GLIT
C930=43 48 31 44 33 45 35 47 4C 4F 42 45 31 44 34 34    CH1D3E5GLOBE1D44
C940=32 47 4F 31 44 34 39 34 47 4F 4C 46 31 44 34 44    2GO1D494GOLF1D4D
C950=34 47 4F 4F 44 31 44 35 33 36 47 4F 56 45 52 4E    4GOOD1D536GOVERN
C960=31 44 35 37 35 47 52 41 44 45 31 44 35 44 34 47    1D575GRADE1D5D4G
C970=52 41 4D 31 44 36 33 35 47 52 41 4E 44 31 44 36    RAM1D635GRAND1D6
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C980=38 35 47 52 41 50 48 31 44 36 45 35 47 52 41 54    85GRAPH1D6E5GRAT
C990=45 31 44 37 33 34 47 52 41 59 31 44 38 32 35 47    E1D734GRAY1D825G
C9A0=52 45 41 54 31 44 37 33 35 47 52 45 45 4E 31 44    REAT1D735GREEN1D
C9B0=37 38 35 47 52 45 45 54 31 44 37 44 34 47 52 45    785GREET1D7D4GRE
C9C0=59 31 44 38 32 35 47 52 49 4E 44 31 44 38 37 37    Y1D825GRIND1D877
C9D0=47 52 4F 43 45 52 59 31 44 38 45 36 47 52 4F 55    GROCERY1D8E6GROU
C9E0=4E 44 31 44 39 35 35 47 52 4F 55 50 31 44 39 43    ND1D955GROUP1D9C
C9F0=34 47 52 4F 57 31 44 41 31 39 47 55 41 52 41 4E    4GROW1DA19GUARAN
CA00=54 45 45 31 44 41 39 35 47 55 41 52 44 31 44 41    TEE1DA95GUARD1DA
CA10=35 35 47 55 45 53 53 31 44 42 31 30 30 30 30 30    55GUESS1DB100000
CA20=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CA30=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CA40=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CA50=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CA60=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CA70=31 48 31 44 42 35 33 48 41 44 31 44 42 41 34 48    1H1DB53HAD1DBA4H
CA80=41 4C 46 31 44 42 45 34 48 41 4C 54 31 44 43 32    ALF1DBE4HALT1DC2
CA90=36 48 41 4D 4D 45 52 31 44 43 36 34 48 41 4E 44    6HAMMER1DC64HAND
CAA0=31 44 43 42 36 48 41 4E 44 4C 45 31 44 44 30 34    1DCB6HANDLE1DD04
CAB0=48 41 4E 47 31 44 44 37 35 48 41 50 50 59 31 44    HANG1DD75HAPPY1D
CAC0=44 42 34 48 41 52 44 31 44 45 30 33 48 41 53 31    DB4HARD1DE03HAS1
CAD0=44 45 34 34 48 41 56 45 31 44 45 38 32 48 45 31    DE44HAVE1DE82HE1
CAE0=44 45 43 34 48 45 41 44 31 44 45 46 34 48 45 41    DEC4HEAD1DEF4HEA
CAF0=52 31 44 46 33 35 48 45 41 52 54 31 44 46 37 34    R1DF35HEART1DF74
CB00=48 45 41 54 31 44 46 43 35 48 45 41 56 59 31 45    HEAT1DFC5HEAVY1E
CB10=30 30 36 48 45 49 47 48 54 31 45 30 34 34 48 45    006HEIGHT1E044HE
CB20=4C 44 31 45 30 39 35 48 45 4C 4C 4F 31 45 30 45    LD1E095HELLO1E0E
CB30=34 48 45 4C 50 31 45 31 35 35 48 45 4E 52 59 31    4HELP1E155HENRY1
CB40=45 31 41 33 48 45 52 31 45 32 30 34 48 45 52 45    E1A3HER1E204HERE
CB50=31 44 46 33 35 48 45 52 54 5A 31 45 32 32 33 48    1DF35HERTZ1E223H
CB60=45 58 31 45 32 37 34 48 49 47 48 31 45 32 44 33    EX1E274HIGH1E2D3
CB70=48 49 53 31 45 33 31 34 48 4F 4C 44 31 45 33 35    HIS1E314HOLD1E35
CB80=34 48 4F 4C 45 31 45 33 42 34 48 4F 4D 45 31 45    4HOLE1E3B4HOME1E
CB90=33 46 34 48 4F 4F 4B 31 45 34 33 34 48 4F 53 54    3F4HOOK1E434HOST
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CBA0=31 45 34 37 33 48 4F 54 31 45 34 43 35 48 4F 54    1E473HOT1E4C5HOT
CBB0=45 4C 31 45 35 30 34 48 4F 55 52 31 45 35 37 35    EL1E504HOUR1E575
CBC0=48 4F 55 53 45 31 45 35 42 33 48 4F 57 31 45 36    HOUSE1E5B3HOW1E6
CBD0=30 35 48 55 4D 41 4E 31 45 36 34 37 48 55 4E 44    05HUMAN1E647HUND
CBE0=52 45 44 31 45 36 43 36 48 55 4E 47 52 59 31 45    RED1E6C6HUNGRY1E
CBF0=37 34 30 30 30 30 30 30 30 30 30 30 30 30 30 30    7400000000000000
CC00=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CC10=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CC20=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CC30=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CC40=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CC50=30 31 49 31 45 37 42 34 49 44 4C 45 31 45 37 46    01I1E7B4IDLE1E7F
CC60=34 49 44 4F 4C 31 45 37 46 32 49 46 31 45 38 34    4IDOL1E7F2IF1E84
CC70=39 49 4D 4D 45 44 49 41 54 45 31 45 38 37 39 49    9IMMEDIATE1E879I
CC80=4D 50 4F 52 54 41 4E 54 31 45 38 46 38 49 4D 50    MPORTANT1E8F8IMP
CC90=52 4F 50 45 52 31 45 39 41 37 49 4D 50 52 4F 56    ROPER1E9A7IMPROV
CCA0=45 31 45 41 33 32 49 4E 31 45 41 43 34 49 4E 43    E1EA32IN1EAC4INC
CCB0=48 31 45 41 46 37 49 4E 43 4C 55 44 45 31 45 42    H1EAF7INCLUDE1EB
CCC0=34 36 49 4E 43 4F 4D 45 31 45 42 44 3B 49 4E 44    46INCOME1EBD;IND
CCD0=45 50 45 4E 44 45 4E 54 31 45 42 34 35 49 4E 44    EPENDENT1EC45IND
CCE0=45 58 31 45 44 30 35 49 4E 44 49 41 31 45 44 39    EX1ED05INDIA1ED9
CCF0=38 49 4E 44 49 43 41 54 45 31 45 44 46 3A 49 4E    8INDICATE1EDF:IN
CD00=44 55 53 54 52 49 41 4C 31 45 45 37 36 49 4E 46    DUSTRIAL1EE76INF
CD10=4F 52 4D 31 45 46 33 37 49 4E 49 54 49 41 4C 31    ORM1EF37INITIAL1
CD20=45 46 42 33 49 4E 4E 31 45 41 43 35 49 4E 50 55    EFB3INN1EAC5INPU
CD30=54 31 46 30 32 37 49 4E 51 55 49 52 45 31 46 30    T1F027INQUIRE1F0
CD40=39 36 49 4E 53 45 52 54 31 46 31 32 37 49 4E 53    96INSERT1F127INS
CD50=50 45 43 54 31 46 31 38 37 49 4E 53 54 41 4C 4C    PECT1F187INSTALL
CD60=31 46 32 31 37 49 4E 53 54 45 41 44 31 46 32 38    1F217INSTEAD1F28
CD70=38 49 4E 53 54 52 55 43 54 31 46 33 30 3A 49 4E    8INSTRUCT1F30:IN
CD80=53 54 52 55 4D 45 4E 54 31 46 33 41 3C 49 4E 53    STRUMENT1F3A<INS
CD90=55 46 46 49 43 49 45 4E 54 31 46 34 36 39 49 4E    UFFICIENT1F469IN
CDA0=53 55 52 41 4E 43 45 31 46 35 30 38 49 4E 54 45    SURANCE1F508INTE
CDB0=52 45 53 54 31 46 35 41 39 49 4E 54 45 52 46 41    REST1F5A9INTERFA
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CDC0=43 45 31 46 36 31 39 49 4E 54 45 52 52 55 50 54    CE1F619INTERRUPT
CDD0=31 46 37 34 37 49 4E 54 52 55 44 45 31 46 37 43    1F747INTRUDE1F7C
CDE0=37 49 4E 56 41 4C 49 44 31 46 38 35 36 49 4E 56    7INVALID1F856INV
CDF0=45 4E 54 31 46 38 45 39 49 4E 56 45 4E 54 4F 52    ENT1F8E9INVENTOR
CE00=59 31 46 39 36 36 49 4E 56 45 53 54 31 46 39 46    Y1F966INVEST1F9F
CE10=37 49 4E 56 4F 49 43 45 31 46 41 37 39 49 52 52    7INVOICE1FA79IRR
CE20=45 47 55 4C 41 52 31 46 42 30 32 49 53 31 46 42    EGULAR1FB02IS1FB
CE30=38 32 49 54 31 46 42 42 34 49 54 45 4D 31 46 42    82IT1FBB4ITEM1FB
CE40=45 39 49 4E 54 45 52 50 52 45 54 31 46 36 42 30    E9INTERPRET1F6B0
CE50=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CE60=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CE70=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CE80=30 30 30 30 30 30 30 30 30 30 30 30 31 4A 31 46 43 000000000001J1FC
CE90=34 34 4A 41 43 4B 31 46 43 41 37 4A 41 4E 55 41    44JACK1FCA7JANUA
CEA0=52 59 31 46 43 46 33 4A 4F 42 31 46 44 41 34 4A    RY1FCF3JOB1FDA4J
CEB0=4F 49 4E 31 46 44 46 34 4A 4F 4C 54 31 46 45 36    OIN1FDF4JOLT1FE6
CEC0=33 4A 4F 59 31 46 45 43 35 4A 55 44 47 45 31 46    3JOY1FEC5JUDGE1F
CED0=46 32 36 4A 55 4C 49 45 54 31 46 46 38 34 4A 55    F26JULIET1FF84JU
CEE0=4C 59 32 30 30 31 34 4A 55 4D 50 32 30 30 38 34    LY20014JUMP20084
CEF0=4A 55 4E 45 32 30 30 45 30 30 30 30 30 30 30 30    JUNE200E00000000
CF00=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CF10=30 30 30 30 30 30 30 30 31 4B 32 30 31 34 34 4B    000000001K20144K
CF20=45 45 50 32 30 31 39 33 4B 45 59 32 30 31 44 38    EEP20193KEY201D8
CF30=4B 45 59 42 4F 41 52 44 32 30 32 30 34 4B 49 4C    KEYBOARD20204KIL
CF40=4C 32 30 32 38 34 4B 49 4C 4F 32 30 32 43 34 4B    L20284KILO202C4K
CF50=4E 45 57 32 32 45 33 34 4B 4E 4F 54 32 33 32 46    NEW22E34KNOT232F
CF60=34 4B 4E 4F 57 32 33 31 30 39 4B 4E 4F 57 4C 45    4KNOW23109KNOWLE
CF70=44 47 45 32 30 33 33 30 30 30 30 30 30 30 30 30    DGE2033000000000
CF80=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
CF90=30 30 30 30 30 30 30 31 4C 32 30 33 41 33 4C 41    00000001L203A3LA
CFA0=42 32 30 33 45 35 4C 41 42 4F 52 32 30 34 32 38    B203E5LABOR20428
CFB0=4C 41 4E 47 55 41 47 45 32 30 34 37 35 4C 41 50    LANGUAGE20475LAP
CFC0=53 45 32 30 35 30 34 4C 41 53 54 32 30 35 41 34    SE20504LAST205A4
CFD0=4C 41 54 45 32 30 35 46 33 4C 41 57 32 30 36 34    LATE205F3LAW2064
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CFE0=34 4C 45 41 44 32 30 36 36 33 4C 45 44 32 30 36    4LEAD20663LED206
CFF0=41 34 4C 45 46 54 32 30 36 45 33 4C 45 47 32 30    A4LEFT206E3LEG20
D000=37 33 35 4C 45 47 41 4C 32 30 37 37 34 4C 45 4E    735LEGAL20774LEN
D010=44 32 30 37 43 36 4C 45 4E 47 54 48 32 30 38 31    D207C6LENGTH2081
D020=34 4C 45 53 53 32 30 38 36 33 4C 45 54 32 30 38    4LESS20863LET208
D030=41 36 4C 45 54 54 45 52 32 30 38 45 35 4C 45 56    A6LETTER208E5LEV
D040=45 4C 32 30 39 33 34 4C 49 46 45 32 30 39 39 35    EL20934LIFE20995
D050=4C 49 47 48 54 32 30 39 45 34 4C 49 4B 45 32 30    LIGHT209E4LIKE20
D060=41 33 34 4C 49 4D 41 32 30 41 38 35 4C 49 4D 49    A34LIMA20A85LIMI
D070=54 32 30 41 44 34 4C 49 4E 45 32 30 42 32 36 4C    T20AD4LINE20B26L
D080=49 4E 45 41 52 32 30 42 37 34 4C 49 4E 4B 32 30    INEAR20B74LINK20
D090=42 45 33 4C 49 50 32 30 43 33 36 4C 49 51 55 49    BE3LIP20C36LIQUI
D0A0=44 32 30 43 37 34 4C 49 53 54 32 30 43 44 36 4C    D20C74LIST20CD6L
D0B0=49 53 54 45 4E 32 30 44 32 36 4C 49 54 54 4C 45    ISTEN20D26LITTLE
D0C0=32 30 44 38 34 4C 4F 41 44 32 30 44 45 34 4C 4F    20D84LOAD20DE4LO
D0D0=41 4E 32 30 45 33 35 4C 4F 43 41 4C 32 30 45 38    AN20E35LOCAL20E8
D0E0=34 4C 4F 43 4B 32 30 45 45 33 4C 4F 47 32 30 46    4LOCK20EE3LOG20F
D0F0=32 34 4C 4F 4E 47 32 30 46 35 34 4C 4F 4F 4B 32    24LONG20F54LOOK2
D100=30 46 38 34 4C 4F 53 53 32 30 46 43 34 4C 4F 53    0F84LOSS20FC4LOS
D110=54 32 30 46 46 33 4C 4F 54 32 31 30 33 33 4C 4F    T20FF3LOT21033LO
D120=57 32 31 30 37 35 4C 41 52 47 45 32 30 35 35 30    W21075LARGE20550
D130=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D140=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D150=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D160=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D170=30 31 4D 32 31 30 41 37 4D 41 43 48 49 4E 45 32    01M210A7MACHINE2
D180=31 30 44 34 4D 41 49 4C 32 31 32 33 3B 4D 41 49    10D4MAIL2123;MAI
D190=4E 54 45 4E 41 4E 43 45 32 31 31 33 34 4D 41 4B    NTENANCE21134MAK
D1A0=45 32 31 31 45 34 4D 41 4C 45 32 31 32 33 33 4D    E211E4MALE21233M
D1B0=41 4E 32 31 32 39 36 4D 41 4E 41 47 45 32 31 32    AN21296MANAGE212
D1C0=44 36 4D 41 4E 55 41 4C 32 31 33 34 3B 4D 41 4E    D6MANUAL2134;MAN
D1D0=55 46 41 43 54 55 52 45 32 31 33 43 34 4D 41 4E    UFACTURE213C4MAN
D1E0=59 32 31 34 39 33 4D 41 50 32 31 34 45 35 4D 41    Y21493MAP214E5MA
D1F0=52 43 48 32 31 35 32 36 4D 41 52 47 49 4E 32 31    RCH21526MARGIN21
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D200=35 37 34 4D 41 52 4B 32 31 35 46 36 4D 41 52 4B    574MARK215F6MARK
D210=45 54 32 31 36 33 35 4D 41 54 43 48 32 31 36 39    ET21635MATCH2169
D220=36 4D 41 54 55 52 45 32 31 36 45 37 4D 41 58 49    6MATURE216E7MAXI
D230=4D 55 4D 32 31 37 34 33 4D 41 59 32 31 37 45 32    MUM21743MAY217E2
D240=4D 45 32 31 38 32 37 4D 45 41 53 55 52 45 32 31    ME21827MEASURE21
D250=38 35 34 4D 45 41 54 32 31 38 41 3A 4D 45 43 48    854MEAT218A:MECH
D260=41 4E 49 43 41 4C 32 31 38 45 35 4D 45 44 49 41    ANICAL218E5MEDIA
D270=32 31 39 38 38 4D 45 44 49 43 49 4E 45 32 31 39    21988MEDICINE219
D280=45 36 4D 45 44 49 55 4D 32 31 41 36 34 4D 45 45    E6MEDIUM21A64MEE
D290=54 32 31 38 41 34 4D 45 47 41 32 31 41 43 36 4D    T218A4MEGA21AC6M
D2A0=45 4D 42 45 52 32 31 42 32 36 4D 45 4D 4F 52 59    EMBER21B26MEMORY
D2B0=32 31 42 38 33 4D 45 4E 32 31 42 45 3B 4D 45 52    21B83MEN21BE;MER
D2C0=43 48 41 4E 44 49 53 45 32 31 43 32 35 4D 45 52    CHANDISE21C25MER
D2D0=47 45 32 31 43 44 37 4D 45 53 53 41 47 45 32 31    GE21CD7MESSAGE21
D2E0=44 32 35 4D 45 54 41 4C 32 31 44 39 35 4D 45 54    D25METAL21D95MET
D2F0=45 52 32 31 44 46 35 4D 49 43 52 4F 32 31 45 34    ER21DF5MICRO21E4
D300=36 4D 49 44 44 4C 45 32 31 45 43 34 4D 49 4B 45    6MIDDLE21EC4MIKE
D310=32 31 46 32 34 4D 49 4C 45 32 31 46 37 34 4D 49    21F24MILE21F74MI
D320=4C 4C 32 31 46 44 35 4D 49 4C 4C 49 32 32 30 31    LL21FD5MILLI2201
D330=37 4D 49 4C 4C 49 4F 4E 32 32 30 36 34 4D 49 4E    7MILLION22064MIN
D340=49 32 32 30 44 35 4D 49 4E 55 53 32 32 31 32 36    I220D5MINUS22126
D350=4D 49 4E 55 54 45 32 32 31 38 3D 4D 49 53 43 45    MINUTE2218=MISCE
D360=4C 4C 41 4E 45 4F 55 53 32 32 31 44 34 4D 49 53    LLANEOUS221D4MIS
D370=53 32 32 32 38 37 4D 49 53 54 41 4B 45 32 32 32    S22287MISTAKE222
D380=43 34 4D 4F 44 45 32 32 33 35 36 4D 4F 44 55 4C    C4MODE22356MODUL
D390=45 32 32 33 46 36 4D 4F 4E 44 41 59 32 32 34 38    E223F6MONDAY2248
D3A0=35 4D 4F 4E 45 59 32 32 35 30 35 4D 4F 4E 54 48    5MONEY22505MONTH
D3B0=32 32 35 36 34 4D 4F 52 45 32 32 35 42 37 4D 4F    22564MORE225B7MO
D3C0=52 4E 49 4E 47 32 32 35 46 34 4D 4F 53 54 32 32    RNING225F4MOST22
D3D0=36 37 35 4D 4F 54 4F 52 32 32 36 43 35 4D 4F 55    675MOTOR226C5MOU
D3E0=4E 54 32 32 37 31 34 4D 4F 56 45 32 32 37 37 32    NT22714MOVE22772
D3F0=4D 52 32 32 37 42 33 4D 52 53 32 32 38 30 32 4D    MR227B3MRS22802M
D400=53 32 32 38 35 34 4D 55 43 48 32 32 38 39 35 4D    S22854MUCH22895M
D410=55 4C 54 49 32 32 38 45 38 4D 55 4C 54 49 50 4C    ULTI228E8MULTIPL
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D420=45 32 32 39 34 38 4D 55 4C 54 49 50 4C 59 32 32    E22948MULTIPLY22
D430=39 43 35 4D 4F 44 45 4C 32 32 33 39 30 30 30 30    9C5MODEL22390000
D440=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D450=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
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D490=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D4A0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D4B0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 31    0000000000000001
D4C0=4E 32 32 41 35 34 4E 41 4D 45 32 32 41 38 34 4E    N22A54NAME22A84N
D4D0=41 4E 4F 32 32 41 44 38 4E 41 54 49 4F 4E 41 4C    ANO22AD8NATIONAL
D4E0=32 32 42 33 36 4E 41 54 49 56 45 32 32 42 42 34    22B36NATIVE22BB4
D4F0=4E 45 41 52 32 32 43 31 34 4E 45 41 54 32 32 43    NEAR22C14NEAT22C
D500=35 34 4E 45 43 4B 32 32 43 39 34 4E 45 45 44 32    54NECK22C94NEED2
D510=32 43 44 38 4E 45 47 41 54 49 56 45 32 32 44 31    2CD8NEGATIVE22D1
D520=33 4E 45 54 32 32 44 38 37 4E 45 55 54 52 41 4C    3NET22D87NEUTRAL
D530=32 32 44 43 33 4E 45 57 32 32 45 33 34 4E 45 58    22DC3NEW22E34NEX
D540=54 32 32 45 37 34 4E 49 43 45 32 32 45 45 36 4E    T22E74NICE22EE6N
D550=49 43 4B 45 4C 32 32 46 33 35 4E 49 47 48 54 32    ICKEL22F35NIGHT2
D560=32 46 39 34 4E 49 4E 45 32 32 46 45 36 4E 49 4E    2F94NINE22FE6NIN
D570=45 54 48 32 33 30 33 36 4E 49 4E 45 54 59 32 33    ETH23036NINETY23
D580=30 39 32 4E 4F 32 33 31 30 35 4E 4F 49 53 45 32    092NO23105NOISE2
D590=33 31 34 34 4E 4F 4E 45 32 33 31 41 34 4E 4F 4F    3144NONE231A4NOO
D5A0=4E 32 33 31 45 36 4E 4F 52 4D 41 4C 32 33 32 33    N231E6NORMAL2323
D5B0=35 4E 4F 52 54 48 32 33 32 41 33 4E 4F 54 32 33    5NORTH232A3NOT23
D5C0=32 46 34 4E 4F 54 45 32 33 33 33 37 4E 4F 54 48    2F4NOTE23337NOTH
D5D0=49 4E 47 32 33 33 37 36 4E 4F 54 49 43 45 32 33    ING23376NOTICE23
D5E0=33 44 36 4E 4F 54 49 46 59 32 33 34 33 38 4E 4F    3D6NOTIFY23438NO
D5F0=56 45 4D 42 45 52 32 33 34 43 33 4E 4F 57 32 33    VEMBER234C3NOW23
D600=35 35 36 4E 55 4D 42 45 52 32 33 35 39 35 4E 55    556NUMBER23595NU
D610=52 53 45 32 33 35 46 33 4E 55 54 32 33 36 33 30    RSE235F3NUT23630
D620=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D630=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
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D640=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D650=30 31 4F 32 33 36 37 33 4F 41 52 32 33 46 41 36    01O236730AR23FA6
D660=4F 42 4A 45 43 54 32 33 36 41 3A 4F 42 4C 49 47    OBJECT236A:OBLIG
D670=41 54 49 4F 4E 32 33 37 42 38 4F 42 53 4F 4C 45    ATION237B8OBSOLE
D680=54 45 32 33 38 35 37 4F 43 54 4F 42 45 52 32 33    TE238570CTOBER23
D690=38 45 33 4F 44 44 32 33 39 36 32 4F 46 32 33 39    8E3ODD239620F239
D6A0=39 33 4F 46 46 32 33 39 43 36 4F 46 46 49 43 45    93OFF239C60FFICE
D6B0=32 33 39 45 38 4F 46 46 49 43 49 41 4C 32 33 41    239E8OFFICIAL23A
D6C0=32 35 4F 46 54 45 4E 32 33 41 38 33 4F 48 4D 32    25OFTEN23A83OHM2
D6D0=33 41 44 33 4F 49 4C 32 33 42 31 33 4F 4C 44 32    3AD3OIL23B13OLD2
D6E0=33 42 36 35 4F 4D 45 47 41 32 33 42 42 34 4F 4D    3B65OMEGA23BB4OM
D6F0=49 54 32 33 43 32 32 4F 4E 32 33 43 38 34 4F 4E    IT23C22ON23C84ON
D700=43 45 32 33 43 42 33 4F 4E 45 32 33 44 30 34 4F    CE23CB3ONE23D04O
D710=4E 4C 59 32 33 44 34 34 4F 50 45 4E 32 33 44 39    NLY23D44OPEN23D9
D720=38 4F 50 45 52 41 42 4C 45 32 33 44 44 37 4F 50    8OPERABLE23DD7OP
D730=45 52 41 54 45 32 33 45 35 38 4F 50 45 52 41 54    ERATE23E58OPERAT
D740=4F 52 32 33 45 43 36 4F 50 54 49 4F 4E 32 33 46    OR23EC6OPTION23F
D750=34 32 4F 52 32 33 46 41 36 4F 52 41 4E 47 45 32    42OR23FA6ORANGE2
D760=33 46 44 35 4F 52 44 45 52 32 34 30 34 33 4F 52    3FD5ORDER24043OR
D770=45 32 33 46 41 38 4F 52 49 47 49 4E 41 4C 32 34    E23FA8ORIGINAL24
D780=30 39 35 4F 53 43 41 52 32 34 31 33 35 4F 54 48    095OSCAR24135OTH
D790=45 52 32 34 31 38 35 4F 55 4E 43 45 32 34 31 43    ER24185OUNCE241C
D7A0=33 4F 55 54 32 34 32 31 34 4F 56 45 4E 32 34 32    3OUT24214OVEN242
D7B0=35 34 4F 56 45 52 32 34 32 39 33 4F 57 4E 32 34    54OVER24293OWN24
D7C0=32 44 36 4F 58 59 47 45 4E 32 34 33 30 30 30 30    2D6OXYGEN2430000
D7D0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D7E0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D7F0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
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D830=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D840=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
D850=30 30 30 30 30 30 30 31 50 32 34 33 41 34 50 41    00000001P243A4PA
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D860=43 4B 32 34 33 44 37 50 41 43 4B 41 47 45 32 34    CK243D7PACKAGE24
D870=34 31 34 50 41 47 45 32 34 34 38 34 50 41 49 44    414PAGE24484PAID
D880=32 34 34 45 34 50 41 49 4E 32 34 35 33 34 50 41    244E4PAIN24534PA
D890=4E 45 32 34 35 33 35 50 41 4E 45 4C 32 34 35 38    NE24535PANEL2458
D8A0=34 50 41 50 41 32 34 35 45 35 50 41 50 45 52 32    4PAPA245E5PAPER2
D8B0=34 36 34 36 50 41 52 43 45 4C 32 34 36 39 35 50    4646PARCEL24695P
D8C0=41 52 45 4E 32 34 36 46 34 50 41 52 54 32 34 37    AREN246F4PART247
D8D0=35 37 50 41 52 54 49 41 4C 32 34 37 39 34 50 41    57PARTIAL24794PA
D8E0=53 53 32 34 37 46 36 50 41 53 53 45 44 32 34 38    SS247F6PASSED248
D8F0=33 34 50 41 53 54 32 34 38 33 33 50 41 54 32 34    34PAST24833PAT24
D900=38 38 37 50 41 54 54 45 52 4E 32 34 38 43 35 50    887PATTERN248C5P
D910=41 55 53 45 32 34 39 32 33 50 41 59 32 34 39 35    AUSE24923PAY2495
D920=33 50 45 41 32 34 33 41 35 50 45 41 43 45 32 34    3PEA243A5PEACE24
D930=44 44 34 50 45 41 4B 32 34 39 41 34 50 45 45 4B    DD4PEAK249A4PEEK
D940=32 34 39 41 37 50 45 52 43 45 4E 54 32 34 39 45    249A7PERCENT249E
D950=36 50 45 52 49 4F 44 32 34 41 35 39 50 45 52 4D    6PERIOD24A59PERM
D960=41 4E 45 4E 54 32 34 41 42 36 50 45 52 53 4F 4E    ANENT24AB6PERSON
D970=32 34 42 33 38 50 45 52 53 4F 4E 41 4C 32 34 42    24B38PERSONAL24B
D980=38 3B 50 45 52 53 4F 4E 41 4C 49 54 59 32 34 42    8;PERSONALITY24B
D990=46 35 50 48 41 53 45 32 34 43 41 35 50 48 4F 4E    F5PHASE24CA5PHON
D9A0=45 32 34 43 46 34 50 49 43 4B 32 34 44 33 34 50    E24CF4PICK24D34P
D9B0=49 43 4F 32 34 44 37 35 50 49 45 43 45 32 34 44    ICO24D75PIECE24D
D9C0=44 34 50 49 4E 54 32 34 45 31 34 50 49 50 45 32    D4PINT24E14PIPE2
D9D0=34 45 36 35 50 4C 41 43 45 32 34 45 42 35 50 4C    4E65PLACE24EB5PL
D9E0=41 49 4E 32 34 46 36 34 50 4C 41 4E 32 34 46 31    AIN24F64PLAN24F1
D9F0=35 50 4C 41 4E 45 32 34 46 36 35 50 4C 41 4E 54    5PLANE24F65PLANT
DA00=32 34 46 43 34 50 4C 41 59 32 35 30 32 36 50 4C    24FC4PLAY25026PL
DA10=45 41 53 45 32 35 30 37 34 50 4C 4F 54 32 35 30    EASE25074PLOT250
DA20=43 34 50 4C 55 53 32 35 31 31 36 50 4F 43 4B 45    C4PLUS25116POCKE
DA30=54 32 35 31 36 35 50 4F 49 4E 54 32 35 31 43 34    T25165POINT251C4
DA40=50 4F 4B 45 32 35 32 33 36 50 4F 4C 49 43 45 32    POKE25236POLICE2
DA50=35 32 37 36 50 4F 4C 49 43 59 32 35 32 44 34 50    5276POLICY252D4P
DA60=4F 4F 52 32 35 36 39 33 50 4F 50 32 35 33 34 34    OOR25693POP25344
DA70=50 4F 52 54 32 35 33 38 38 50 4F 53 49 54 49 4F    PORT25388POSITIO
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DA80=4E 32 35 33 44 38 50 4F 53 49 54 49 56 45 32 35    N253D8POSITIVE25
DA90=34 34 38 50 4F 53 53 49 42 4C 45 32 35 34 43 34    448POSSIBLE254C4
DAA0=50 4F 53 54 32 35 35 34 39 50 4F 54 45 4E 54 49    POST25549POTENTI
DAB0=41 4C 32 35 35 39 35 50 4F 55 4E 44 32 35 36 33    AL25595POUND2563
DAC0=34 50 4F 55 52 32 35 36 39 35 50 4F 57 45 52 32    4POUR25695POWER2
DAD0=35 36 44 38 50 52 41 43 54 49 43 45 32 35 37 32    56D8PRACTICE2572
DAE0=37 50 52 45 4D 49 55 4D 32 35 37 41 37 50 52 45    7PREMIUM257A7PRE
DAF0=50 41 52 45 32 35 38 32 35 50 52 45 53 53 32 35    PARE25825PRESS25
DB00=38 39 38 50 52 45 53 53 55 52 45 32 35 38 45 37    898PRESSURE258E7
DB10=50 52 45 56 45 4E 54 32 35 39 33 38 50 52 45 56    PREVENT25938PREV
DB20=49 4F 55 53 32 35 39 42 35 50 52 49 43 45 32 35    IOUS259B5PRICE25
DB30=41 32 39 50 52 49 4E 43 49 50 41 4C 32 35 41 38    A29PRINCIPAL25A8
DB40=39 50 52 49 4E 43 49 50 4C 45 32 35 41 38 35 50    9PRINCIPLE25A85P
DB50=52 49 4E 54 32 35 42 32 35 50 52 49 4F 52 32 35    RINT25B25PRIOR25
DB60=42 38 38 50 52 49 4F 52 49 54 59 32 35 42 44 37    B88PRIORITY25BD7
DB70=50 52 49 56 41 54 45 32 35 43 36 35 50 52 4F 42    PRIVATE25C65PROB
DB80=45 32 35 43 45 37 50 52 4F 42 4C 45 4D 32 35 44    E25CE7PROBLEM25D
DB90=33 39 50 52 4F 43 45 44 55 52 45 32 35 44 42 37    39PROCEDURE25DB7
DBA0=50 52 4F 43 45 45 44 32 35 45 33 37 50 52 4F 43    PROCEED25E37PROC
DBB0=45 53 53 32 35 45 41 37 50 52 4F 44 55 43 45 32    ESS25EA7PRODUCE2
DBC0=35 46 32 37 50 52 4F 44 55 43 54 32 35 46 41 3A    5F27PRODUCT25FA:
DBD0=50 52 4F 46 45 53 53 49 4F 4E 32 36 30 33 36 50    PROFESSION26036P
DBE0=52 4F 46 49 54 32 36 30 43 37 50 52 4F 47 52 41    ROFIT260C7PROGRA
DBF0=4D 32 36 31 33 38 50 52 4F 47 52 45 53 53 32 36    M26138PROGRESS26
DC00=31 38 37 50 52 4F 4A 45 43 54 32 36 32 33 34 50    187PROJECT26234P
DC10=52 4F 4D 32 36 32 44 37 50 52 4F 4D 4F 54 45 32    ROM262D7PROMOTE2
DC20=36 33 32 37 50 52 4F 54 45 43 54 32 36 34 30 36    6327PROTECT26406
DC30=50 55 42 4C 49 43 32 36 34 38 34 50 55 4C 4C 32    PUBLIC26484PULL2
DC40=36 34 46 35 50 55 4C 53 45 32 36 35 33 38 50 55    64F5PULSE26538PU
DC50=52 43 48 41 53 45 32 36 35 45 34 50 55 52 45 32    RCHASE265E4PURE2
DC60=36 36 35 37 50 55 52 50 4F 53 45 32 36 36 39 34    6657PURPOSE26694
DC70=50 55 53 48 32 36 36 46 33 50 55 54 32 36 37 33    PUSH266F3PUT2673
DC80=37 50 52 4F 50 4F 53 45 32 36 33 39 30 30 30 30    7PROPOSE26390000
DC90=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
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DCA0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
DCB0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
DCC0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
DCD0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
DCE0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
DCF0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
DD00=30 30 30 30 30 30 30 30 30 30 31 51 32 36 37 37    000000000001Q2677
DD10=37 51 55 41 4C 49 46 59 32 36 37 43 38 51 55 41    7QUALIFY267C8QUA
DD20=4E 54 49 54 59 32 36 38 35 35 51 55 41 52 54 32    NTITY26855QUART2
DD30=36 38 44 37 51 55 41 52 54 45 52 32 36 39 32 36    68D7QUARTER26926
DD40=51 55 45 42 45 43 32 36 39 38 38 51 55 45 53 54    QUEBEC26988QUEST
DD50=49 4F 4E 32 36 39 46 35 51 55 49 43 4B 32 36 41    ION269F5QUICK26A
DD60=38 35 51 55 49 45 54 32 36 41 44 34 51 55 49 5A    85QUIET26AD4QUIZ
DD70=32 36 42 39 35 51 55 4F 54 41 32 36 42 45 35 51    26B95QUOTA26BE5Q
DD80=55 4F 54 45 32 36 43 34 34 51 55 49 54 32 36 42    UOTE26C44QUIT26B
DD90=41 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    A000000000000000
DDA0=30 30 30 30 30 30 30 30 31 52 32 36 43 39 35 52    000000001R26C95R
DDB0=41 44 49 4F 32 36 45 33 34 52 41 49 4C 32 36 43    ADIO26E34RAIL26C
DDC0=43 34 52 41 49 4E 32 36 44 32 35 52 41 49 53 45    C4RAIN26D25RAISE
DDD0=32 36 44 37 35 52 41 4E 47 45 32 36 44 43 34 52    26D75RANGE26DC4R
DDE0=41 54 45 32 36 45 41 35 52 41 54 49 4F 32 36 45    ATE26EA5RATIO26E
DDF0=46 35 52 45 41 43 48 32 36 46 36 34 52 45 41 44    F5REACH26F64READ
DE00=32 36 46 42 35 52 45 41 44 59 32 36 46 46 34 52    26FB5READY26FF4R
DE10=45 41 4C 32 37 30 34 36 52 45 41 53 4F 4E 32 37    EAL27046REASON27
DE20=30 38 36 52 45 42 41 54 45 32 37 30 45 36 52 45    086REBATE270E6RE
DE30=43 41 4C 4C 32 37 31 34 37 52 45 43 45 49 50 54    CALL27147RECEIPT
DE40=32 37 31 41 37 52 45 43 45 49 56 45 32 37 32 30    271A7RECEIVE2720
DE50=36 52 45 43 4F 52 44 32 37 32 44 33 52 45 44 32    6RECORD272D3RED2
DE60=37 33 33 34 52 45 45 4C 32 37 30 34 35 52 45 46    7334REEL27045REF
DE70=45 52 32 37 33 37 36 52 45 46 55 4E 44 32 37 33    ER27376REFUND273
DE80=43 36 52 45 46 55 53 45 32 37 34 33 38 52 45 47    C6REFUSE27438REG
DE90=49 53 54 45 52 32 37 34 42 37 52 45 47 55 4C 41    ISTER274B7REGULA
DEA0=52 32 37 35 33 34 52 45 49 4E 32 36 44 32 36 52    R27534REIN26D26R
DEB0=45 4A 45 43 54 32 37 35 41 35 52 45 4C 41 59 32    EJECT275A5RELAY2
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DEC0=37 36 32 37 52 45 4C 45 41 53 45 32 37 36 38 36    7627RELEASE27686
DED0=52 45 4D 41 49 4E 32 37 36 45 36 52 45 4D 4F 56    REMAIN276E6REMOV
DEE0=45 32 37 37 35 36 52 45 50 41 49 52 32 37 37 42    E27756REPAIR277B
DEF0=36 52 45 50 45 41 54 32 37 38 31 37 52 45 50 4C    6REPEAT27817REPL
DF00=41 43 45 32 37 38 37 36 52 45 50 4F 52 54 32 37    ACE27876REPORT27
DF10=38 46 39 52 45 50 52 45 53 45 4E 54 32 37 39 36    8F9REPRESENT2796
DF20=37 52 45 51 55 45 53 54 32 37 41 30 37 52 45 51    7REQUEST27A07REQ
DF30=55 49 52 45 32 37 41 38 3B 52 45 51 55 49 53 49    UIRE27A8;REQUISI
DF40=54 49 4F 4E 32 37 42 30 36 52 45 53 43 55 45 32    TION27B06RESCUE2
DF50=37 42 41 38 52 45 53 45 4D 42 4C 45 32 37 43 32    7BA8RESEMBLE27C2
DF60=35 52 45 53 45 54 32 37 43 42 38 52 45 53 49 53    5RESET27CB8RESIS
DF70=54 4F 52 32 37 44 31 37 52 45 53 50 45 43 54 32    TOR27D17RESPECT2
DF80=37 44 38 37 52 45 53 50 4F 4E 44 32 37 45 30 34    7D87RESPOND27E04
DF90=52 45 53 54 32 37 46 35 38 52 45 53 54 52 49 43    REST27F58RESTRIC
DFA0=54 32 37 46 41 36 52 45 53 55 4C 54 32 38 30 33    T27FA6RESULT2803
DFB0=36 52 45 53 55 4D 45 32 38 30 41 36 52 45 54 41    6RESUME280A6RETA
DFC0=49 4C 32 38 31 31 36 52 45 54 41 49 4E 32 38 31    IL28116RETAIN281
DFD0=41 36 52 45 54 55 52 4E 32 38 32 31 38 52 45 56    A6RETURN28218REV
DFE0=49 53 49 4F 4E 32 38 32 37 37 52 45 53 4F 4C 56    ISION28277RESOLV
DFF0=45 32 38 32 45 36 52 49 42 42 4F 4E 32 38 33 35    E282E6RIBBON2835
E000=35 52 49 47 48 54 32 38 33 42 35 52 4F 4D 45 4F    5RIGHT283B5ROMEO
E010=32 38 34 30 34 52 4F 4F 4D 32 36 34 37 34 52 4F    28404ROOM26474RO
E020=4F 54 32 38 34 42 35 52 4F 55 4E 44 32 38 34 46    OT284B5ROUND284F
E030=35 52 4F 55 54 45 32 38 35 35 33 52 4F 57 32 38    5ROUTE28553ROW28
E040=35 41 33 52 55 4E 32 38 35 44 34 52 55 53 48 32    5A3RUN285D4RUSH2
E050=38 36 31 3B 52 45 53 50 4F 4E 53 49 42 4C 45 32    861;RESPONSIBLE2
E060=37 45 38 30 30 30 30 30 30 30 30 30 30 30 30 30    7E80000000000000
E070=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
E080=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
E090=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
E0A0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
E0B0=30 30 30 30 30 30 30 30 30 31 53 32 38 36 35 34    0000000001S28654
E0C0=53 41 46 45 32 38 36 38 34 53 41 49 4C 32 38 37    SAFE28684SAIL287
E0D0=34 36 53 41 4C 41 52 59 32 38 36 44 34 53 41 4C    46SALARY286D4SAL
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E0E0=45 32 38 37 34 34 53 41 4D 45 32 38 37 41 38 53    E28744SAME287A8S
E0F0=41 54 55 52 44 41 59 32 38 37 46 34 53 41 56 45    ATURDAY287F4SAVE
E100=32 38 38 37 33 53 41 59 32 38 38 43 34 53 43 41    28873SAY288C4SCA
E110=4E 32 38 39 30 35 53 43 45 4E 54 31 34 37 31 38    N28905SCENT14718
E120=53 43 48 45 44 55 4C 45 32 38 39 35 36 53 43 48    SCHEDULE28956SCH
E130=4F 4F 4C 32 38 39 45 37 53 43 49 45 4E 43 45 32    OOL289E7SCIENCE2
E140=38 41 33 35 53 43 4F 52 45 32 38 41 42 35 53 43    8A35SCORE28AB5SC
E150=52 41 50 32 38 42 30 35 53 43 52 45 57 32 38 42    RAP28B05SCREW28B
E160=36 33 53 45 41 31 33 44 34 36 53 45 41 52 43 48    63SEA13D46SEARCH
E170=32 38 42 43 34 53 45 41 54 32 38 43 31 36 53 45    28BC4SEAT28C16SE
E180=43 4F 4E 44 32 38 43 35 36 53 45 43 52 45 54 32    COND28C56SECRET2
E190=38 43 43 37 53 45 43 54 49 4F 4E 32 38 44 32 38    8CC7SECTION28D28
E1A0=53 45 43 55 52 49 54 59 32 38 44 39 33 53 45 45    SECURITY28D93SEE
E1B0=31 33 44 34 35 53 45 49 5A 45 32 38 45 32 36 53    13D45SEIZE28E26S
E1C0=45 4C 45 43 54 32 38 45 36 34 53 45 4C 4C 32 38    ELECT28E64SELL28
E1D0=45 44 34 53 45 4D 49 32 38 46 31 34 53 45 4E 44    ED4SEMI28F14SEND
E1E0=32 38 46 36 34 53 45 4E 54 31 34 37 31 38 53 45    28F64SENT14718SE
E1F0=4E 54 45 4E 43 45 32 38 46 38 38 53 45 50 41 52    NTENCE28F88SEPAR
E200=41 54 45 32 39 30 33 39 53 45 50 54 45 4D 42 45    ATE29039SEPTEMBE
E210=52 32 39 31 33 38 53 45 51 55 45 4E 43 45 32 39    R29138SEQUENCE29
E220=31 44 36 53 45 52 49 41 4C 32 39 32 35 36 53 45    1D6SERIAL29256SE
E230=52 49 45 53 32 39 32 42 37 53 45 52 56 49 43 45    RIES292B7SERVICE
E240=32 39 33 30 33 53 45 54 32 39 33 35 35 53 45 56    29303SET29355SEV
E250=45 4E 32 39 33 39 37 53 45 56 45 4E 54 48 32 39    EN29397SEVENTH29
E260=33 46 37 53 45 56 45 4E 54 59 32 39 34 37 37 53    3F7SEVENTY29477S
E270=45 56 45 52 41 4C 32 39 34 45 33 53 45 57 32 39    EVERAL294E3SEW29
E280=46 33 35 53 48 41 52 50 32 39 35 38 35 53 48 49    F35SHARP29585SHI
E290=46 54 32 39 35 43 34 53 48 49 50 32 39 36 31 34    FT295C4SHIP29614
E2A0=53 48 4F 50 32 39 36 35 35 53 48 4F 52 54 32 39    SHOP29655SHORT29
E2B0=36 39 36 53 48 4F 55 4C 44 32 39 36 45 35 53 48    696SHOULD296E5SH
E2C0=55 4E 54 32 39 37 33 34 53 48 55 54 32 39 37 38    UNT29734SHUT2978
E2D0=34 53 49 44 45 32 39 37 43 36 53 49 45 52 52 41    4SIDE297C6SIERRA
E2E0=32 39 38 31 36 53 49 47 4E 41 4C 32 39 38 37 36    29816SIGNAL29876
E2F0=53 49 4C 56 45 52 32 39 38 45 36 53 49 4E 47 4C    SILVER298E6SINGL
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E300=45 32 39 39 34 33 53 49 58 32 39 39 42 35 53 49    E29943SIX299B5SI
E310=58 54 48 32 39 41 31 35 53 49 58 54 59 32 39 41    XTH29A15SIXTY29A
E320=38 34 53 49 5A 45 32 39 42 30 34 53 4B 49 4E 32    84SIZE29B04SKIN2
E330=39 42 35 33 53 4B 59 32 39 42 41 35 53 4C 41 4E    9B53SKY29BA5SLAN
E340=47 32 39 43 30 35 53 4C 41 53 48 32 39 43 35 35    G29C05SLASH29C55
E350=53 4C 41 56 45 32 39 43 41 34 53 4C 49 50 32 39    SLAVE29CA4SLIP29
E360=44 30 34 53 4C 4F 57 32 39 44 35 35 53 4D 41 4C    D04SLOW29D55SMAL
E370=4C 32 39 44 39 35 53 4D 45 4C 4C 32 39 44 44 35    L29D95SMELL29DD5
E380=53 4D 49 4C 45 32 39 45 32 35 53 4D 4F 4B 45 32    SMILE29E25SMOKE2
E390=39 45 39 34 53 4E 4F 57 32 39 45 45 32 53 4F 32    9E94SNOW29EE2SO2
E3A0=39 46 33 34 53 4F 46 54 32 39 46 37 35 53 4F 4C    9F34SOFT29F75SOL
E3B0=49 44 32 41 30 31 34 53 4F 4D 45 32 42 31 39 33    ID2A014SOME2B193
E3C0=53 4F 4E 32 42 32 38 35 53 4F 52 52 59 32 41 30    SON2B285SORRY2A0
E3D0=37 34 53 4F 52 54 32 41 30 42 35 53 4F 55 4E 44    74SORT2A0B5SOUND
E3E0=32 41 31 30 36 53 4F 55 52 43 45 32 41 31 36 35    2A106SOURCE2A165
E3F0=53 4F 55 54 48 32 41 31 42 35 53 50 41 43 45 32    SOUTH2A1B5SPACE2
E400=41 32 30 35 53 50 41 52 4B 32 41 32 36 35 53 50    A205SPARK2A265SP
E410=45 41 4B 32 41 32 42 37 53 50 45 43 49 41 4C 32    EAK2A2B7SPECIAL2
E420=41 33 30 36 53 50 45 45 43 48 32 41 33 43 35 53    A306SPEECH2A3C5S
E430=50 45 45 44 32 41 33 37 35 53 50 45 4C 4C 32 41    PEED2A375SPELL2A
E440=34 32 35 53 50 45 4E 44 32 41 34 37 35 53 50 4C    425SPEND2A475SPL
E450=49 54 32 41 34 44 35 53 50 4F 4F 4E 32 41 35 33    IT2A4D5SPOON2A53
E460=36 53 50 52 49 4E 47 32 41 35 38 36 53 51 55 41    6SPRING2A586SQUA
E470=52 45 32 41 35 45 35 53 54 41 43 4B 32 41 36 33    RE2A5E5STACK2A63
E480=35 53 54 41 49 52 32 41 37 42 35 53 54 41 4E 44    5STAIR2A7B5STAND
E490=32 41 36 38 38 53 54 41 4E 44 41 52 44 32 41 36    2A688STANDARD2A6
E4A0=45 34 53 54 41 52 32 41 37 36 35 53 54 41 52 45    E4STAR2A765STARE
E4B0=32 41 37 42 35 53 54 41 52 54 32 41 38 30 35 53    2A7B5START2A805S
E4C0=54 41 54 45 32 41 38 35 37 53 54 41 54 49 4F 4E    TATE2A857STATION
E4D0=32 41 38 42 36 53 54 41 54 55 53 32 41 39 32 35    2A8B6STATUS2A925
E4E0=53 54 45 41 4C 32 41 39 39 35 53 54 45 45 4C 32    STEAL2A995STEEL2
E4F0=41 39 39 34 53 54 45 50 32 41 39 45 35 53 54 49    A994STEP2A9E5STI
E500=43 4B 32 41 41 33 35 53 54 4F 43 4B 32 41 41 38    CK2AA35STOCK2AA8
E510=34 53 54 4F 50 32 41 41 44 35 53 54 4F 52 45 32    4STOP2AAD5STORE2
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E520=41 42 32 38 53 54 52 41 49 47 48 54 32 41 42 37   AB28STRAIGHT2AB7
E530=36 53 54 52 41 49 54 32 41 42 37 36 53 54 52 45   6STRAIT2AB76STRE
E540=45 54 32 41 42 45 36 53 54 52 45 53 53 32 41 43   ET2ABE6STRESS2AC
E550=34 36 53 54 52 49 4E 47 32 41 43 41 39 53 54 52   46STRING2ACA9STR
E560=55 43 54 55 52 45 32 41 44 30 35 53 54 59 4C 45   UCTURE2AD05STYLE
E570=32 41 44 38 37 53 55 42 4A 45 43 54 32 41 44 46   2AD87SUBJECT2ADF
E580=3A 53 55 42 53 54 49 54 55 54 45 32 41 45 39 38   :SUBSTITUTE2AE98
E590=53 55 42 54 52 41 43 54 32 41 46 34 3A 53 55 46   SUBTRACT2AF4:SUF
E5A0=46 49 43 49 45 4E 54 32 41 46 45 37 53 55 47 47   FICIENT2AFE7SUGG
E5B0=45 53 54 32 42 30 36 34 53 55 49 54 32 42 31 30   EST2B064SUIT2B10
E5C0=35 53 55 49 54 45 32 42 31 34 33 53 55 4D 32 42   5SUITE2B143SUM2B
E5D0=31 39 37 53 55 4D 4D 41 52 59 32 42 31 44 36 53   197SUMMARY2B1D6S
E5E0=55 4D 4D 45 52 32 42 32 33 33 53 55 4E 32 42 32   UMMER2B233SUN2B2
E5F0=38 36 53 55 4E 44 41 59 32 42 32 43 35 53 55 50   86SUNDAY2B2C5SUP
E600=45 52 32 42 33 34 36 53 55 50 50 4C 59 32 42 33   ER2B346SUPPLY2B3
E610=39 37 53 55 52 46 41 43 45 32 42 33 46 35 53 55   97SURFACE2B3F5SU
E620=52 47 45 32 42 34 34 37 53 55 52 47 45 52 59 32   RGE2B447SURGERY2
E630=42 34 39 38 53 55 52 47 49 43 41 4C 32 42 34 46   B498SURGICAL2B4F
E640=37 53 55 52 50 4C 55 53 32 42 35 37 37 53 55 53   7SURPLUS2B577SUS
E650=50 45 4E 44 32 42 35 44 35 53 57 45 45 50 32 42   PEND2B5D5SWEEP2B
E660=36 35 35 53 57 45 45 54 32 42 31 34 36 53 57 49   655SWEET2B146SWI
E670=54 43 48 32 42 36 41 36 53 59 4E 54 41 58 32 42   TCH2B6A6SYNTAX2B
E680=37 30 36 53 59 53 54 45 4D 32 42 37 39 35 53 48   706SYSTEM2B795SH
E690=41 52 45 32 39 35 34 30 30 30 30 30 30 30 30 30   ARE2954000000000
E6A0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E6B0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E6C0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E6D0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E6E0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E6F0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E700=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E710=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E720=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
E730=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30   0000000000000000
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E740=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
E750=30 30 30 30 31 54 32 42 37 46 35 54 41 42 4C 45    00001T2B7F5TABLE
E760=32 42 38 33 34 54 41 49 4C 32 42 38 39 34 54 41    2B834TAIL2B894TA
E770=4C 45 32 42 38 39 34 54 41 4C 4B 32 42 38 45 35    LE2B894TALK2B8E5
E780=54 41 4E 47 4F 32 42 39 31 37 54 41 4E 47 45 4E    TANGO2B917TANGEN
E790=54 32 42 39 38 36 54 41 52 47 45 54 32 42 41 31    T2B986TARGET2BA1
E7A0=33 54 45 41 32 42 37 46 34 54 45 41 4D 32 42 41    3TEA2B7F4TEAM2BA
E7B0=38 39 54 45 43 48 4E 49 43 41 4C 32 42 41 43 33    89TECHNICAL2BAC3
E7C0=54 45 45 32 42 37 46 3B 54 45 4D 50 45 52 41 54    TEE2B7F;TEMPERAT
E7D0=55 52 45 32 42 42 35 33 54 45 4E 32 42 42 46 38    URE2BB53TEN2BBF8
E7E0=54 45 52 4D 49 4E 41 4C 32 42 43 33 34 54 45 53    TERMINAL2BC34TES
E7F0=54 32 42 43 41 34 54 48 41 4E 32 42 43 46 33 54    T2BCA4THAN2BCF3T
E800=48 45 32 42 44 33 34 54 48 45 4E 32 42 43 46 36    HE2BD34THEN2BCF6
E810=54 48 45 4F 52 59 32 42 44 36 34 54 48 49 4E 32    THEORY2BD64THIN2
E820=42 44 42 35 54 48 49 4E 47 32 42 44 46 35 54 48    BDB5THING2BDF5TH
E830=49 4E 4B 32 42 45 33 35 54 48 49 52 44 32 42 45    INK2BE35THIRD2BE
E840=38 38 54 48 49 52 54 45 45 4E 32 42 45 43 36 54    88THIRTEEN2BEC6T
E850=48 49 52 54 59 32 42 46 33 38 54 48 4F 55 53 41    HIRTY2BF38THOUSA
E860=4E 44 32 42 46 38 35 54 48 52 45 45 32 43 30 30    ND2BF85THREE2C00
E870=35 54 48 52 45 57 32 43 30 34 37 54 48 52 4F 55    5THREW2C047THROU
E880=47 48 32 43 30 34 38 54 48 55 52 53 44 41 59 32    GH2C048THURSDAY2
E890=43 30 38 36 54 49 43 4B 45 54 32 43 31 30 34 54    C086TICKET2C104T
E8A0=49 4C 4C 32 43 31 36 34 54 49 4D 45 32 43 31 41    ILL2C164TIME2C1A
E8B0=34 54 49 52 45 32 43 31 46 35 54 49 54 4C 45 32    4TIRE2C1F5TITLE2
E8C0=43 32 34 32 54 4F 32 43 46 44 35 54 4F 44 41 59    C242TO2CFD5TODAY
E8D0=32 43 32 42 36 54 4F 49 4C 45 54 32 43 33 31 34    2C2B6TOILET2C314
E8E0=54 4F 4C 4C 32 43 33 38 38 54 4F 4D 4F 52 52 4F    TOLL2C388TOMORRO
E8F0=57 32 43 33 44 33 54 4F 4E 32 43 34 34 34 54 4F    W2C3D3TON2C444TO
E900=4E 45 32 43 34 39 33 54 4F 4F 32 43 46 44 34 54    NE2C493TOO2CFD4T
E910=4F 4F 4C 32 43 34 44 35 54 4F 54 41 4C 32 43 35    OOL2C4D5TOTAL2C5
E920=31 35 54 4F 55 43 48 32 43 35 37 35 54 4F 57 45    15TOUCH2C575TOWE
E930=4C 32 43 35 43 35 54 52 41 43 45 32 43 36 31 35    L2C5C5TRACE2C615
E940=54 52 41 44 45 32 43 36 37 35 54 52 41 49 4E 32    TRADE2C675TRAIN2
E950=43 36 44 38 54 52 41 4E 53 41 43 54 32 43 37 33    C6D8TRANSACT2C73
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E960=38 54 52 41 4E 53 46 45 52 32 43 39 44 3A 54 52    8TRANSFER2C9D:TR
E970=41 4E 53 49 53 54 4F 52 32 43 38 35 38 54 52 41    ANSISTOR2C858TRA
E980=4E 53 4D 49 54 32 43 38 45 39 54 52 41 4E 53 50    NSMIT2C8E9TRANSP
E990=4F 52 54 32 43 39 38 3E 54 52 41 4E 53 50 4F 52    ORT2C98>TRANSPOR
E9A0=54 41 54 49 4F 4E 32 43 41 33 36 54 52 41 56 45    TATION2CA36TRAVE
E9B0=4C 32 43 42 30 38 54 52 49 41 4E 47 4C 45 32 43    L2CB08TRIANGLE2C
E9C0=42 37 37 54 52 4F 55 42 4C 45 32 43 43 31 35 54    B77TROUBLE2CC15T
E9D0=52 55 43 4B 32 43 43 38 34 54 52 55 45 32 43 43    RUCK2CC84TRUE2CC
E9E0=44 35 54 52 55 53 54 32 43 44 32 33 54 52 59 32    D5TRUST2CD23TRY2
E9F0=43 44 38 37 54 55 45 53 44 41 59 32 43 44 45 34    CD87TUESDAY2CDE4
EA00=54 55 4E 45 32 43 45 36 34 54 55 52 4E 32 43 45    TUNE2CE64TURN2CE
EA10=42 36 54 57 45 4C 56 45 32 43 45 46 36 54 57 45    B6TWELVE2CEF6TWE
EA20=4E 54 59 32 43 46 36 33 54 57 4F 32 43 46 44 34    NTY2CF63TWO2CFD4
EA30=54 59 50 45 32 44 30 31 30 30 30 30 30 30 30 30    TYPE2D0100000000
EA40=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EA50=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EA60=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EA70=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EA80=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EA90=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EAA0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 31    0000000000000001
EAB0=55 32 44 30 36 35 55 4C 54 52 41 32 44 30 41 35    U2D065ULTRA2D0A5
EAC0=55 4E 44 45 52 32 44 31 30 37 55 4E 49 46 4F 52    UNDER2D107UNIFOR
EAD0=4D 32 44 31 35 35 55 4E 54 49 4C 32 44 31 45 32    M2D155UNTIL2D1E2
EAE0=55 50 32 44 32 35 36 55 52 47 45 4E 54 32 44 32    UP2D256URGENT2D2
EAF0=38 32 55 53 32 44 32 46 33 55 53 45 32 44 33 32    82US2D2F3USE2D32
EB00=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EB10=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EB20=30 30 31 56 32 44 33 42 36 56 41 43 41 4E 54 32    001V2D3B6VACANT2
EB30=44 33 46 35 56 41 4C 49 44 32 44 34 36 35 56 41    D3F5VALID2D465VA
EB40=4C 55 45 32 44 34 43 34 56 41 52 59 32 44 36 36    LUE2D4C4VARY2D66
EB50=36 56 45 4E 44 4F 52 32 44 35 33 34 56 45 4E 54    6VENDOR2D534VENT
EB60=32 44 35 39 36 56 45 52 49 46 59 32 44 35 45 34    2D596VERIFY2D5E4
EB70=56 45 52 59 32 44 36 36 33 56 49 41 32 44 36 41    VERY2D663VIA2D6A
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EB80=36 56 49 43 54 4F 52 32 44 36 46 35 56 4F 49 43    6VICTOR2D6F5VOIC
EB90=45 32 44 37 35 34 56 4F 49 44 32 44 37 42 34 56    E2D754VOID2D7B4V
EBA0=4F 4C 54 32 44 38 31 36 56 4F 4C 55 4D 45 32 44    OLT2D816VOLUME2D
EBB0=38 36 30 30 30 30 30 30 30 30 30 30 30 30 30 30    8600000000000000
EBC0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EBD0=30 30 30 30 30 30 30 30 30 30 30 30 31 57 32 44 38 000000000001W2D8
EBE0=45 34 57 41 47 45 32 44 39 36 34 57 41 49 54 32    E4WAGE2D964WAIT2
EBF0=44 39 43 34 57 41 4E 54 32 44 41 31 33 57 41 53    D9C4WANT2DA13WAS
EC00=32 44 41 36 34 57 41 53 48 32 44 41 41 35 57 41    2DA64WASH2DAA5WA
EC10=54 45 52 32 44 41 44 34 57 41 54 54 32 44 42 32    TER2DAD4WATT2DB2
EC20=34 57 41 56 45 32 44 42 36 33 57 41 59 32 44 44    4WAVE2DB63WAY2DD
EC30=30 32 57 45 32 44 42 42 34 57 45 41 4B 32 44 43    02WE2DBB4WEAK2DC
EC40=43 36 57 45 41 50 4F 4E 32 44 42 45 34 57 45 41    C6WEAPON2DBE4WEA
EC50=52 32 44 45 45 39 57 45 44 4E 45 53 44 41 59 32    R2DEE9WEDNESDAY2
EC60=44 43 34 34 57 45 45 4B 32 44 43 43 35 57 45 49    DC44WEEK2DCC5WEI
EC70=47 48 32 44 44 30 36 57 45 49 47 48 54 32 44 39    GH2DD06WEIGHT2D9
EC80=43 34 57 45 4E 54 32 44 44 34 34 57 45 53 54 32    C4WENT2DD44WEST2
EC90=44 44 39 33 57 45 54 32 44 44 45 34 57 48 41 54    DD93WET2DDE4WHAT
ECA0=32 44 45 32 35 57 48 45 45 4C 32 44 45 36 34 57    2DE25WHEEL2DE64W
ECB0=48 45 4E 32 44 45 41 35 57 48 45 52 45 32 44 45    HEN2DEA5WHERE2DE
ECC0=45 35 57 48 49 43 48 32 44 46 33 35 57 48 49 4C    E5WHICH2DF35WHIL
ECD0=45 32 44 46 38 37 57 48 49 53 4B 45 59 32 44 46    E2DF87WHISKEY2DF
ECE0=45 35 57 48 49 54 45 32 45 30 35 33 57 48 4F 32    E5WHITE2E053WHO2
ECF0=45 30 41 35 57 48 4F 4C 45 32 45 33 42 33 57 48    E0A5WHOLE2E3B3WH
ED00=59 32 45 34 46 34 57 49 4C 4C 32 45 30 45 36 57    Y2E4F4WILL2E0E6W
ED10=49 4E 44 4F 57 32 45 31 32 36 57 49 4E 54 45 52    INDOW2E126WINTER
ED20=32 45 31 38 34 57 49 52 45 32 45 31 45 34 57 49    2E184WIRE2E1E4WI
ED30=54 48 32 45 32 33 38 57 49 54 48 44 52 41 57 32    TH2E238WITHDRAW2
ED40=45 32 37 37 57 49 54 48 4F 55 54 32 45 32 45 33    E277WITHOUT2E2E3
ED50=57 4F 4E 32 33 44 30 34 57 4F 52 44 32 45 33 36    WON23D04WORD2E36
ED60=34 57 4F 52 4B 32 45 33 41 35 57 52 49 54 45 32    4WORK2E3A5WRITE2
ED70=38 33 42 35 57 52 4F 4E 47 32 45 33 45 30 30 30    83B5WRONG2E3E000
ED80=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
ED90=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
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EDA0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EDB0=30 30 30 30 30 30 30 30 30 30 30 31 58 32 45 34    000000000001X2E4
EDC0=31 34 58 52 41 59 32 45 34 36 30 30 30 30 30 30    14XRAY2E46000000
EDD0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EDE0=30 30 30 30 30 30 30 30 30 30 31 59 32 45 34 46    000000000001Y2E4F
EDF0=36 59 41 4E 4B 45 45 32 45 35 34 34 59 41 52 44    6YANKEE2E544YARD
EE00=32 45 35 42 34 59 45 41 52 32 45 35 46 36 59 45    2E5B4YEAR2E5F6YE
EE10=4C 4C 4F 57 32 45 36 33 33 59 45 53 32 45 36 39    LLOW2E633YES2E69
EE20=39 59 45 53 54 45 52 44 41 59 32 45 36 44 33 59    9YESTERDAY2E6D3Y
EE30=45 54 32 45 37 37 33 59 4F 55 32 44 30 36 34 59    ET2E773YOU2D064Y
EE40=4F 55 52 32 45 37 42 30 30 30 30 30 30 30 30 30    OUR2E7B000000000
EE50=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EE60=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EE70=30 31 5A 32 45 37 46 33 5A 41 50 32 45 38 32 34    01Z2E7F3ZAP2E824
EE80=5A 45 52 4F 32 45 38 36 34 5A 4F 4E 45 32 45 38    ZERO2E864ZONE2E8
EE90=43 34 5A 55 4C 55 32 45 39 30 30 30 30 30 30 30    C4ZULU2E900000000
EEA0=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EEB0=30 30 30 30 30 30 30 30 30 30 33 43 4F 4E 38 30    000000000003CON80
EEC0=33 44 49 53 38 31 32 45 44 38 38 32 45 4E 38 32    3DIS812ED882EN82
EED0=32 45 52 38 41 32 45 53 38 42 33 46 55 4C 38 43    2ER8A2ES8B3FUL8C
EEE0=32 49 4E 38 33 33 49 4E 47 38 44 34 4C 45 53 53    2IN833ING8D4LESS
EEF0=38 45 32 4C 59 38 46 34 4D 45 4E 54 39 30 34 4E    8E2LY8F4MENT904N
EF00=45 53 53 39 31 33 4E 4F 4E 38 34 33 50 52 45 38    ESS913NON843PRE8
EF10=35 32 52 45 38 36 31 53 39 32 34 53 49 4F 4E 39    52RE861S924SION9
EF20=34 31 54 39 33 34 54 45 45 4E 39 35 34 54 49 4F    41T934TEEN954TIO
EF30=4E 39 34 32 55 4E 38 37 34 57 41 52 44 39 36 31    N942UN874WARD961
EF40=59 39 37 31 5A 39 38 30 30 30 30 30 30 30 30 30    Y971Z98000000000
EF50=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EF60=30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30    0000000000000000
EF70=31 31 31 39 31 33 36 45 31 34 41 41 31 37 43 44    1119136E14AA17CD
EF80=31 39 35 42 31 43 36 30 31 44 34 44 31 45 35 30    195B1C601D4D1E50
EF90=31 45 44 39 31 46 46 38 32 30 32 43 32 30 41 38    1ED91FF8202C20A8
EFA0=32 31 46 32 32 33 34 43 32 34 31 33 32 34 35 45    21F2234C2413245E
EFB0=32 36 39 38 32 38 34 30 32 39 38 31 32 42 39 31    269828402981 2B91
```

```
EFC0=32 44 31 35 32 44 36 46 32 44 46 45 32 45 34 36    2D152D6F2DFE2E46
EFD0=32 45 35 34 32 45 39 30 32 45 38 36 32 33 44 30    2E542E902E8623D0
EFE0=32 43 46 44 32 43 30 30 31 43 35 37 31 42 43 42    2CFD2C001C571BCB
EFF0=32 39 39 42 32 39 33 39 31 39 38 33 32 32 46 45    299B2939198322FE
```

APPENDIX H

VOICE MESSAGE FORMATS

H.1 TALK MODE FORMAT

The TALK Mode is the major voice mode of operation available with the voice system demonstration hardware. This mode actually produces spoken output from received message text. Figure H-1 summarizes the TALK Mode message preamble format. Figure H-2 highlights the use of the composition detail in the actual voiced message portion of the received text.

Refer to the preamble portion of the TALK Mode shown in figure H-1:

a. The first four "*" (asterisk) characters shown are only required when a TALK Mode message is inputted from the message processor unit (MPU) or RS-232 port of the microcomputer. In this case, the microcomputer will strip off these four characters and then handle the message in a "turn-around" fashion as if the message had actually been inputted from the AFSATCOM modem receive port. Normally, when a message is inputted either via the satellite link or by using the AFSATCOM test translator, the first four "*" characters would not be sent.

b. The next preamble character, "$\overline{\text{SOH}}$" or "*", initiates message processing (i.e., mode search) by the microcomputer on messages received in the modem input message buffer in the microcomputer.

c. The next character, V or W, indicates the source of the voice mode message to the microprocessor: a "V" indicates the AFSATCOM modem; a "W" indicates the MPU/RS-232. Without either of these two characters, received messages would simply be passed through the microcomputer with no further processing.

d. The next three $\overline{\text{ADR}}$ characters are the microcomputer address. When the computer is first turned on (or re-initialized), this address sequence is set to "ABC". It can be changed by communications supervisory (COMSUP) command.

e. The "T" designates the TALK Mode.

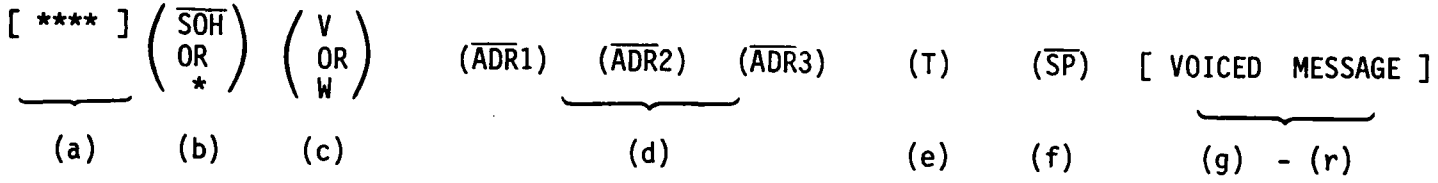

Figure H-1. TALK Mode: Preamble Detail

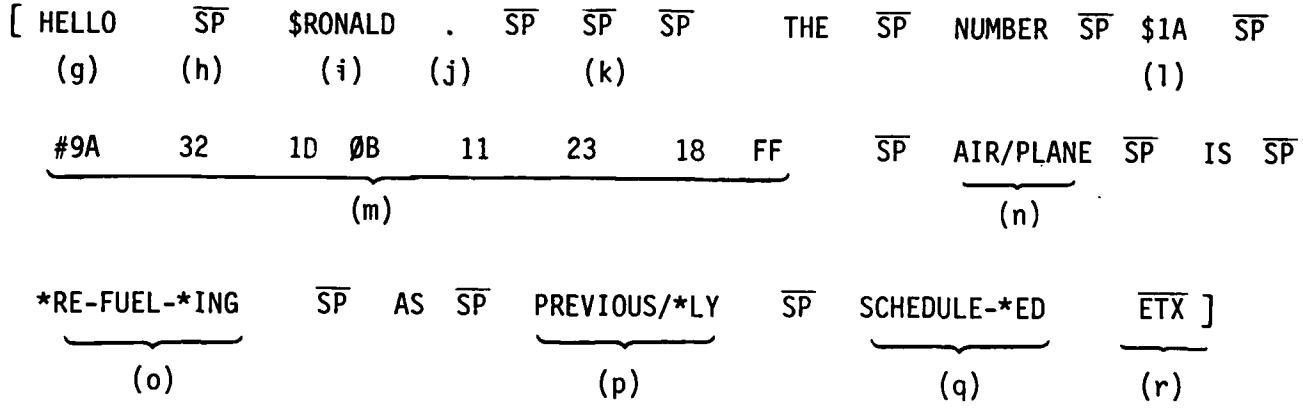

Figure H-2. TALK Mode: Voiced Message Composition Detail

f. A mandatory American Standard Code for Information Interchange (ASCII) "space" ($\overline{SP}$) character is used to delineate the voiced message portion of the text from the preamble.

Refer to the sample voiced message showing actual composition detail in figure H-2.

g. The upper-case word "HELLO" is one of approximately 1300 prestored fixed words, prefixes, and suffixes available in the microcomputer's vocabulary which can be voiced directly. Words which are prestored but not fixed are also possible. Words not fitting either category are automatically spelled out in the SPELLING mode. Only upper-case characters are considered valid.

h. The "$\overline{SP}$" character is one of several valid delimiters used in message composition. The "$\overline{SP}$" and "." (period) characters insert long pauses into spoken output when used as a delimiter while the "/" (slash), "-" (hyphen), and "$\overline{ETX}$" characters result in short pauses and are usually reserved for concatenation of words with other words, prefixes, and suffixes.

i. The "$" (dollar sign) character immediately preceding the upper-case word "RONALD" forces the microcomputer to enter a SPELLING mode whereby the word is voiced using the internationally-recognized International Civil Aviation Organization (ICAO) phonetic spell-out (e.g., ROMEO, OSCAR, NOVEMBER, ALPHA, LIMA, DELTA). This spell-out occurs regardless of whether or not the word is already prestored in the microcomputer's vocabulary when the SPELLING mode "$" character precedes the actual word to be voiced.

j. The "." (period) character is a valid delimiter indicating a long pause between the two words which it separates.

k. Shown are three "$\overline{SP}$" characters used to delimit the next word from the previous one. Any number of "$\overline{SP}$" characters could have been used.

l. Another SPELLING mode character precedes the word "1A". Note here that any numerals Ø to 9 or upper-case alphabetic characters could have been accommodated.

m. The "#" (pound) character preceding the alphanumeric sequence denotes a DIRECT mode for this particular word. Thus, any alphanumeric sequence following "#" is passed directly to the microcomputer output without further modification.

In the case shown, the sequence "9A 32 1D ØB 11 23 18 FF" represents a phonetic mode command sequence to the VOTRAX computer for the word "OFFICIAL", which is represented by the phoneme sequence:

"UH1(32), F(1D), I1(ØB), SH(11), UH3(23), L(18)".

The "9A" is a command to start a phoneme mode in the VOTRAX microcomputer, while the "FF" is a command to stop the phoneme mode. The "#" character can also be used for any function or capability available for direct use with the VOTRAX microcomputer, as described in reference 2, since any valid word following the "#" will be outputted directly without further processing.

n. The "/" (slash) is used as a word concatenation symbol to produce a minimum pause state between the existing prestored words "AIR" and "PLANE" in order to voice a new word, AIRPLANE. Although the "-" (hyphen) could also have been used here for concatenation, it is usually employed (at the user's option) as a concatenation symbol with prefixes or suffixes as shown next. Like the "/", the "-" produces a minimum pause state.

o. Prefix "*RE" and suffix "*ING" are concatenated with "FUEL" to produce the word REFUELING. The "*" (asterisk) character is used to denote a special PREFIX/SUFFIX look-up mode to the microcomputer.

p. The alternate concatenation symbol, "/" (slash), can be used for a word combined with a prefix or suffix. This could have also been entered as "PREVIOUS-*LY" with no difference in voice output.

q. The word SCHEDULED is shown as "SCHEDULE" (an existing prestore word), concatenated with the suffix "*ED" (an existing prestored suffix). If the word "SCHEDULED" were presented to the microcomputer, it would be voiced in the SPFLLING mode (unless it was first predefined in the WORD STORE Mode).

r. $\overline{\text{ETX}}$ (End-of-Text) is a valid word delimiter normally reserved for use at the end of a message. Functionally, it is equivalent to the space, period, slash, and hyphen characters for identifying the end of a word. However, like the slash and hyphen, it will produce a minimum pause state.

H.2 VERIFY MODE FORMAT

The VERIFY Mode of operation is used in conjunction with the TALK Mode by giving the voice system user an interactive ability to first verify his message content for direct recognition of the vocabulary by the microcomputer. Figure H-3 summarizes the VERIFY Mode preamble format. Figures H-4 and H-5 highlight the composition detail in both the input and output messages of this mode.

Refer to the preamble portion of the received text in figure H-3:

a. Identical to TALK Mode preamble function.

b. Identical to TALK Mode preamble function.

c. Identical to TALK Mode preamble function.

d. Identical to TALK Mode preamble function.

e. The "V" character indicates the VERIFY Mode to the microcomputer. This mode character is the only basic formatting difference between the TALK and VERIFY modes.

f. Identical to TALK Mode preamble function.

g. This is the message to be verified. Figure H-4 shows the composition detail of a typical input message to be verified. Any message which obeys proper word formatting rules as explained in the TALK Mode message example above can qualify as such a message. Unlike the TALK Mode messages however, this message will not actually be voiced.

Refer to figure H-5, which shows the composition detail of an output message:

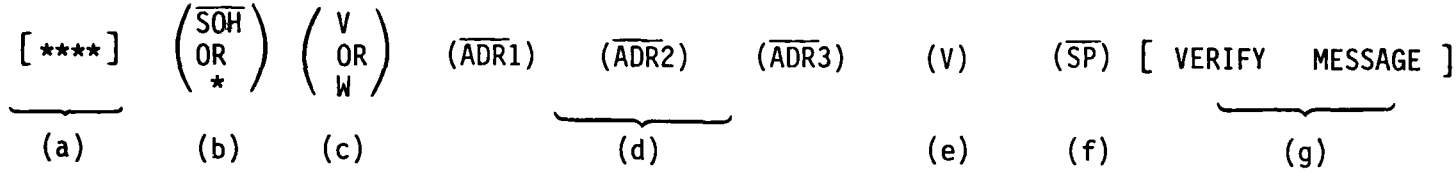

Figure H-3. VERIFY Mode: Preamble Detail

[THIS SP IS SP EXAMPLE SP OF SP VERIFY SP MESSAGE - *ES.]

Figure H-4. VERIFY Mode: Message Input Composition Detail

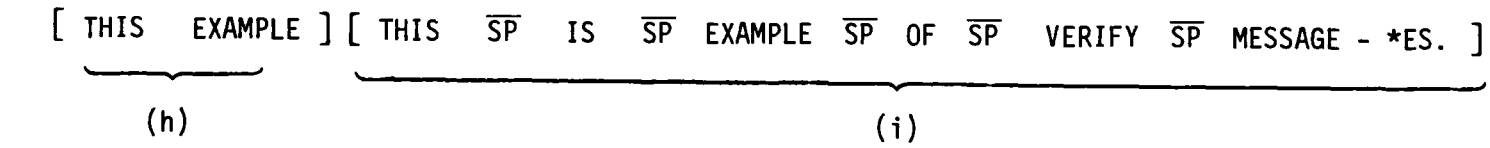

Figure H-5. VERIFY Mode: Message Output Composition Detail

h. Undefined vocabulary contained in the text of the message to be verified is returned to the sending source, indicated by the operator designated source character (V or W). The words "THIS" and "EXAMPLE" are not currently defined in the microcomputer's vocabulary and the system so indicates to the sending source.

i. After returning any undefined vocabulary, the system returns a replica of the VERIFY message as originally sent, so that the operator can compare any currently unrecognized vocabulary with entire message text as received. At this point the operator may choose to recompose and re-verify the message, or may simply send it as is. In any case, use of the VERIFY Mode is entirely optional since any properly formatted message can be voiced, regardless of whether the vocabulary is recognized or not. Any unrecognized words will be voiced in the SPELLING mode.

H.3 WORD STORE MODE FORMAT

The format used to access the WORD STORE Mode of the microcomputer is shown in figure H-6. This mode enhances the prestored fixed word vocabulary of the microcomputer in near real-time by allowing individual users to define new prestored words which can be subsequently accessed by all users of the system in the TALK Mode or VERIFY Mode of operation.

Operationally, a user might first send a message in the VERIFY Mode in order to assess the system's current vocabulary. A user could then add to this vocabulary by defining to the system, in the WORD STORE Mode, any new word(s) which he deems useful or necessary. All users would then be able to use this enhanced vocabulary for TALK Mode message traffic.

Refer to figure H-6:

a. Identical to TALK Mode and VERIFY Mode preamble function.

b. Identical to TALK Mode and VERIFY Mode preamble function.

c. Identical to TALK Mode and VERIFY Mode preamble function.

d. Identical to TALK Mode and VERIFY Mode preamble function.

e. The "W" character designates the WORD STORE Mode to the microcomputer which in turn utilizes the WORD STORE message following the preamble.

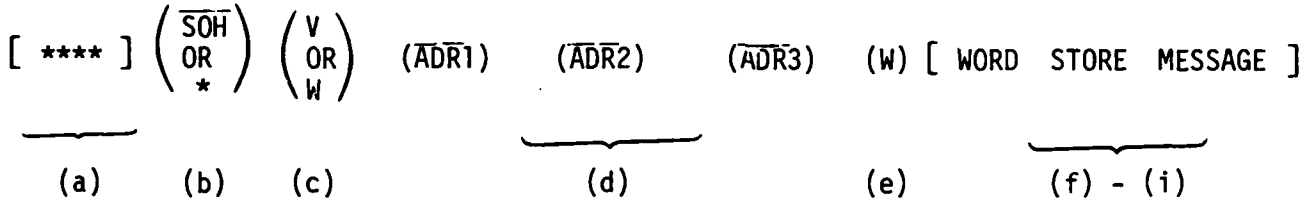

Figure H-6. WORD STORE Mode: Preamble Detail

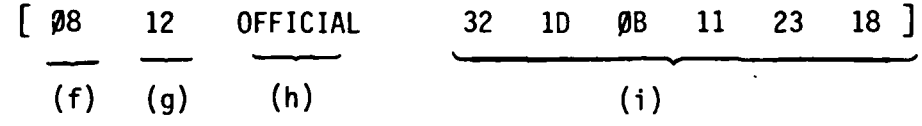

Figure H-7. WORD STORE Mode: Message Composition Detail

Refer to figure H-7:

f. The required two-character numeric sequence, given by "08" in this sample WORD STORE message, represents the word-length parameter field for the word "OFFICIAL." Only word lengths to 15 are presently considered valid by the microcomputer's software.

g. Following the word-length parameter, the required two-character numeric sequence, given by "12" in this sample message, represents the user-defined phoneme-length parameter field for the word "OFFICIAL." Only phoneme lengths to 30 are presently considered valid.

h. The eight-character word "OFFICIAL" represents a typical word which might be stored.

i. The typical sequence of 12 alphanumeric characters following the word to be stored represents the six phonemes required to voice the word "OFFICIAL" in the TALK Mode. These are given by:

32(UH1), 1D(F), 0B(I1), 11(SH), 23(UH3), 18(L).

GLOSSARY

AFSATCOM	Air Force Satellite Communications
ASR	*automatic send/receive*
b/s	bits per second
CP	command post
EPROM	electronically programmable read-only memory
FLTSATCOM	Fleet Satellite Communications
FSK	frequency shift keying
I/O	input/output
KG	key generator
MPU	message processor unit
NB	narrowband
OW	orderwire
RAM	random access memory
RF	radio frequency
ROM	read-only memory
RX	receive
SBC	single board computer
TDM	time division multiplex
TSO	time sharing
TTY	teletype
UHF	ultra high frequency
VSM	versatile speech module
WB	wideband